

Research Note 82-25

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LEADER RESPONSES TO COLLECTIVE FAILURE,  
AND MAINTENANCE OF GROUP INTEGRATION,  
TASK MOTIVATION, COMPLIANCE,  
AND LEADER ENDORSEMENT

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|---|-------------------------------------|---|
| 1. REPORT NUMBER<br>Research Note 82-25   | 2. GOVT ACCESSION NO.<br>AD-A120105 | 3. RECIPIENT'S CATALOG NUMBER   |
| 4. TITLE (and Subtitle)<br>Leader Responses to Collective Failure, and Maintenance of Group Integration, Task Motivation, Compliance, and Leader Endorsement  |                                     | 5. TYPE OF REPORT & PERIOD COVERED<br>Final Report 1977-1978                |
|   |                                     | 6. PERFORMING ORG. REPORT NUMBER  |
| 7. AUTHOR(s)<br>Kenneth H. Price and Howard Garland   |                                     | 8. CONTRACT OR GRANT NUMBER(s)<br>DAHC19-77-0005                            |
| 9. PERFORMING ORGANIZATION NAME AND ADDRESS<br>Kenneth H. Price and Howard Garland<br>Dept. Management & Organizational Behavior<br>University of Texas at Arlington, TX 76019  |                                     | 10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS<br>2Q161102B74F |
| 11. CONTROLLING OFFICE NAME AND ADDRESS<br>Army Research Institute for the Behavioral & Social Sciences, 5001 Eisenhower Avenue<br>Alexandria, VA 22333   |                                     | 12. REPORT DATE<br>November 1980  |
|   |                                     | 13. NUMBER OF PAGES<br>105  |
| 14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office)   |                                     | 15. SECURITY CLASS. (of this report)<br>Unclassified                        |
|   |                                     | 15a. DECLASSIFICATION/DOWNGRADING SCHEDULE                                  |
| 16. DISTRIBUTION STATEMENT (of this Report)<br>Approved for public release; distribution unlimited  |                                     |   |
| 17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)  |                                     |   |
| 18. SUPPLEMENTARY NOTES   |                                     |   |
| 19. KEY WORDS (Continue on reverse side if necessary and identify by block number)<br>Leader interventions; collective failure; compliance; task motivation; group integration; group performance   |                                     |   |
| 20. ABSTRACT (Continue on reverse side if necessary and identify by block number)<br>Eight research studies on leader and group member functioning, using undergraduate students as subjects, focused on the impact of leader behavior and on measures of compliance or performance. The research examined: (1) leader interventions in response to collective failure, (2) the relationship between task expertise and compliance with a leader, (3) factors enhancing group member compliance, and (4) reward distributions. Results challenged the assumption that leader endorsement and group member compliance are positively |                                     |   |

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20. ABSTRACT (Cont.)

related and suggested that positive feedback is more effective than negative feedback following collective failure. Group member compliance appears unrelated either to leader competence or to group member endorsement of the leader, and lack of group member competence appeared to influence compliance.

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Department of the Army

September 1980

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Army Project Number  
2Q161102B74F

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## SUMMARY

The research covered in this report sought to examine a number of different questions related to leader and group member functioning. Major areas of interest included: (a) leader interventions to maintain group integration, group motivation, and leader endorsement following collective group failure; (b) the relationship between leader expertise, group member expertise, and compliance with a leader's task suggestions; (c) situational factors and leader behaviors that might enhance group member compliance; (d) reward distributions made by leaders under conditions in which leader self-interest in group member performance should be maximized; and (e) reactions of high and low performing group members to varying leader reward distributions.

We began this project by examining leader feedback in response to collective failure. Our early findings raised some questions concerning the assumption that leader endorsement and group member compliance were positively related. Although we continued to investigate leader intervention strategies following group performance (e.g., attributions for success and failure and allocation of rewards between high and low performers), we began to reexamine the relationship between leader endorsement and group member compliance with specific emphasis on leader and group member task expertise. In addition, we broadened our investigation to include other strategies which a leader might use to increase group member compliance.

All of the research described in this report examined the impact of behavior that emanated from leaders. In addition, we tried to include behavioral measures of compliance or performance wherever possible in our experiments.

All subjects used in this project were college students recruited from introductory sections of behavioral science and management. These students received course credit and, in most cases, a small monetary reward for their participation in this research. A series of eight studies, including pilot studies, were conducted.

A summary of the major findings of this research project is presented below:

1. Positive compared to negative leader feedback following collective group failure led to higher leader



endorsement, group integration and perceived task motivation. No effect of feedback was found on compliance with a leader's suggestions.

2. Leaders tend to use ego-enhancing/defensive attributions in evaluating their group's performance following collective group success and failure. This tendency was amplified in public as compared to private conditions. Measures of group integration and leader endorsement were not affected by the type of leader attribution.

3. Group members do not appear to comply with a leader's suggestions solely as a function of the leader's level of competence. Leader endorsement (based on the task competence of the leader) is also unrelated to compliance.

4. The perceived competence of the group members appears to be an important factor in determining the extent to which group members comply with a leader's suggestion. In some situations low group member competence increases compliance, irrespective of the competence of the leader and in other situations compliance appears to occur only under conditions of low group member competence and high leader competence.

5. A reciprocal compared to nonreciprocal leader influence strategy appears more successful in enhancing compliance when the group member's own suggestion is of high quality. A nonreciprocal compared to reciprocal strategy appears more successful in enhancing compliance when the group members' suggestion is of poor quality.

6. Leaders, who present task suggestions with a demand that group members follow their ideas, appear to be more successful in obtaining compliance than leaders who present their task suggestions with no direct influence attempt, particularly when group members are of moderate competence.

7. Leaders appear to follow a rule of equity (i.e., proportionality) in their allocation of rewards to high and low performing group members, even in situations where one might expect the leader to violate equity in order to either increase the performance of the low performing group member or to increase harmony and cooperation between group members. The leader's own belief in personal locus of control did, however, affect reward distributions, with high personal control leaders being more likely to follow equity than low personal control leaders.

## EXPERIMENT I

### Leader Interventions to Ameliorate the Negative Consequences of Collective Group Failure

#### ABSTRACT

In laboratory groups the consequences of positive, negative and no leader feedback were examined following collective group failure. Results suggested that positive leader feedback, following collective failure, is a more effective strategy than negative leader feedback to increase group integration, perceived task motivation and leader endorsement. The type of feedback had no impact on compliance with the suggestions of the leader. In addition, the target of feedback (group versus individual) had no impact on any of the dependent measures.

#### Introduction

Considerable attention has been directed at examining the consequences of collective group success and failure. In general, the literature indicates that in groups without formal leaders, success leads to greater interpersonal attraction and task motivation than does failure (Deutsch, 1959,; Dustin, 1966; Meyers, 1962; Zander, 1971).

The consequences of collective success and failure for leadership have also been examined. Studies (Julian, Hollander, and Regula, 1969; Michener and Lawler, 1975) have indicated that leaders of groups which fail suffer significant losses in endorsement relative to leaders of groups which succeed. Furthermore, these effects appear regardless of leadership style (Price, 1977), suggesting that how you play the game may not be as important as whether you win or lose.

A simple reinforcement model might account for the findings summarized above. Collective success is rewarding, while collective failure is punishing. The rewards associated with success become associated with the members of the group, the task and the group leader as do the punishments or costs associated with failure.

Given the clearly disintegrative effects of collective failure, it is surprising that no research could be found that is concerned with overcoming these negative consequences after group failure has occurred. The current study seeks to examine leader behaviors that may be used to ameliorate some of the negative consequences which follow collective failure.

One characteristic leader behavior involves providing his group with feedback after task performance. A common reaction to group failure, by leaders, involves communication of disappointment with the group's performance. If the disintegrative effects of failure are, in fact, a function of punishing outcomes, then we might seriously question such negative feedback, as it would only serve to amplify the already punishing outcomes experienced by the group members. On the other hand positive leader feedback following collective failure could serve to reduce some of the disintegrating effects of that failure. By complimenting the group members on their efforts, despite failure, the leader helps to provide the group with a positive outcome.

Such praise may be regarded as a non-contingent reward. In this regard, Cherrington, Reitz, and Scott (1971) hypothesized that work group members receiving non-contingent monetary reinforcement would report greater satisfaction and more favorable attitudes toward components of the task setting than those who were not rewarded. This hypothesis was supported in an experiment which varied both the presence or absence of reward and reward contingency. While it is certainly true that reward following failure might be dysfunctional for future performance in conditions where the group had exerted little effort, it is also true that at times failure may be related to variables that are external to the group. Consider, for example, a situation in which the marketing department of a product organization has just lost a sales contract to a major competitor. The members of this department may have worked for months at a level of effort which has brought them success many times in the past. Their failure would in this case be attributable not to their own lack of effort, but to a combination of external factors (e.g., personality of potential customer, better price from competitor, etc.). Praise from a superior under these circumstances might serve to keep morale as well as effort, high in future sales competition. In addition to the above arguments, recent experimental research on reward allocation (Greenberg and Leventhal, 1976; Shapiro, 1975) has demonstrated that "supervisors" will overcompensate failing work groups and their members in order to motivate poor performers and reduce potential intragroup conflicts.

While neither of these studies examined the consequences of overreward, they are suggestive of a strategy that research subjects feel should be followed. In light of the above research, Hypothesis 1 predicts that positive leader feedback following collective failure will lead to greater group integration, leader endorsement, task motivation, and compliance with group leader suggestions than will negative leader feedback. Compliance is included in Hypothesis 1 because both Homans (1961) and Hollander Julian (1970) have suggested a positive relationship between leader endorsement and group member compliance.

A second question addressed by this study concerns the target of leader feedback. Specifically, leaders may provide feedback to the group or to individual members of the group. Hypothesis 2 predicts that, following collective failure, positive group feedback will lead to higher group integration and task motivation than positive individual feedback, while negative group feedback will lead to lower integration and task motivation than negative individual feedback. In contrast, Hypothesis 3 predicts that, following collective failure, positive individual feedback will lead to higher leader endorsement than positive group feedback, while negative individual feedback will lead to lower leader endorsement than negative group feedback. Hypotheses 2 and 3 are based on the assumption that group oriented feedback may tie the rewards or punishments of each group member to his membership in the group, while individually oriented feedback would seem to tie each member's outcomes to the leader's behavior.

### Method

#### Subjects and Experimental Design

Subjects were 120 male undergraduate volunteers from business administration and sociology. They received course credit for participation in this research.

The basic experiment was to first induce collective group failure and then manipulate the independent variables in a 2 (positive versus negative leader feedback) x 2 (individual versus group feedback) factorial design. Two additional control conditions were run for comparison purposes. These included a no leader feedback condition (to check on the relative effects of positive versus negative leader feedback) and a no performance evaluation condition (to check on the collective failure induction). Collective group failure was held constant across all conditions with

the exception of the no performance evaluation condition. Subjects in this condition received no performance feedback and were debriefed after completing the first problem solving task and accompanying dependent measures. There were ten groups in each experimental condition.

### Procedure

Subjects were run in three-person groups. Two group members were naive and one was a confederate. The same confederate was used across all experimental conditions. The general instructions indicated that subjects would be working on two problems and performance on both problems was highly correlated. To encourage the group to work hard, each group member was told he could earn \$2.00 on each problem if the group's performance was better than 60 percent of the groups that previously completed the problem. After the necessity of choosing a competent leader was explained, a leader selection task was distributed. The confederate was always selected as leader.

Problem 1 required that the subjects work together for 8 minutes under Brainstorming Instructions. Subjects were to list as many factors as they could which they believed that middle managers stated, in a regional survey, contributed to their job satisfaction. The leader always suggested the same five factors, and his job was to select 12 from the total list developed by the group which he felt were most frequently mentioned by middle managers. Group members were not aware of which 12 factors were selected by the leader as he did this privately, but in the presence of the other group members. In addition to choosing the 12 final factors, the leader was responsible on the first problem for keeping track of time, recording the group members answers and making sure that each group member had ample time to make his suggestions.

Group failure was induced by the experimenter presenting group members, in all but the no performance evaluation condition, with bogus feedback that they scored 17.5 with a percentile score of 33 on the first problem task. Since they did not surpass the 60 percentile, they did not qualify for the bonus. No performance evaluation groups were told they would receive performance feedback after completing the second problem.

Immediately after feedback or a statement indicating that feedback would be given after the second problem, a questionnaire was administered measuring group integration and leader endorsement. All questions were seven interval

bi-polar scales, e.g., ranging from extremely enjoyable to extremely unenjoyable, with a neutral point. Integration questions included: satisfaction with group membership, enjoyment of working with group members on a different task, enjoyment of meeting group members socially, and feeling like a member of an effective group. The endorsement questions were adopted from Michener and Lawler (1975). They included: satisfaction with the leader's performance, willingness to have the leader continue as leader, legitimacy of the leader, and support for the leader. Group members completed the questionnaire in private. They were told that the leader was completing a questionnaire concerning his reactions to the group members. Following completion of the questionnaires, groups in the no performance evaluation condition were debriefed.

After completing their questionnaires the leader handed each group member, in the four leader feedback conditions, a copy of his performance ratings. Ratings were made along seven interval bi-polar scales. They included quality of suggestions, understanding of issues, involvement, cooperation, clarity of suggestions, attentiveness to others, timing of suggestions, and overall contributions.

Feedback target was manipulated by personalizing the leader's ratings. In the individual feedback condition, each rating scale contained a space where the group member's name was written in. In the group feedback condition, the words "group members" were written in.

In the positive feedback condition, the leader's ratings varied between the two most positive intervals. In the negative feedback condition, the leader's ratings varied between the two most negative intervals. The leader (confederate) distributed his ratings to the other group members. He was blind to the actual ratings by using closed folders and ratings which were prepared by the experimenter. Leader feedback was omitted in the no leader feedback condition.

Following leader feedback, subjects were reseated together and Problem 2 was distributed. Group members were given 20 pairs of job factors. They were asked to indicate which factor, in each pair, they believed was ranked as more important in contributing to job satisfaction by a group of regionally surveyed blue-collar workers. Group members were told to first solve the problem individually and then combine their answers into a single group solution. The leader would play an advisory role. After individual solutions were reached, the leader placed his answers on the

blackboard and briefly (approximately 10 minutes) outlined his reasons for each answer. At the conclusion of his remarks, the leader left to (ostensibly) work on another problem. The subjects had 10 minutes to reach a single group solution. The leader presented the same answers and rationale to each of the groups. Group members were not allowed to question the leader in order to control the perceptions of task expertise. The first dependent measure of compliance was simply the extent to which the group's final solution agreed with the suggested solution of the leader.

After collection of Problem 2, subjects filled out a second questionnaire in private. Integration and leader endorsement were re-measured. Task motivation was also measured using seven interval bi-polar scales, including perceived importance of doing well, reported effort, perceived effort of teammate, and perceived importance of teammate doing well. The internal consistency for each scale was calculated using alpha. Respective values for the scales were .93 for the task motivation scale, .80 for the endorsement scale and .65 for the group integration scale.

Finally, group members were reseated together, ostensibly, to receive performance feedback on Problem 2. At this time, the leader said, "Before you give us feedback could we solve Problem 1 again as a group. I think we could do better." The experimenter indicated that he couldn't offer any additional money. The leader then said: "That's O.K. Could we have 20 minutes to work on Problem 1 again?" The experimenter asked each group member if he wished to resolve Problem 1 and probed for how much time he was willing to spend resolving Problem 1. The amount of time from 0 to 20 minutes that the group members agreed to spend was the second measure of compliance.

## Results

### Success of Experimental Manipulations

To determine the effectiveness of the collective failure induction, one-way analyses of variance were performed comparing the three performance evaluation conditions with the no performance evaluation condition. Significant results were obtained for both the integration,  $F(3, 56) = 8.32$ ,  $p < .001$  and endorsement,  $F(3, 56) = 4.16$ ,  $p < .01$  scales. Planned comparisons tests revealed that while all conditions receiving the collective failure induction did not differ significantly from one another, all were

significantly lower in group integration ( $p < .01$ ) and leader endorsement ( $p < .05$ ) than the no performance evaluation control condition. These results offer strong evidence for the disintegrative effects of group failure and indicate the induction of collective failure was successful.

To check on the positive versus negative leader feedback manipulation, subjects were asked to evaluate the favorability of leader feedback along a seven interval bi-polar scale. A  $2 \times 2$  analysis of variance on the four leader feedback conditions revealed a significant main effect of positive versus negative feedback,  $F(1, 36) = 201.89$ ,  $p < .0001$ , with subjects receiving positive feedback ( $\bar{X} = 5.8$ ) perceiving that feedback to be far more positive than those receiving negative feedback ( $\bar{X} = 2.6$ ). No other effects were significant.

Subjects indicated whether they received individual or group feedback by checking one of two statements concerning feedback orientation. Analysis of variance on these dichotomous scores revealed a significant main effect of the group versus individual manipulation,  $F(1, 36) = 11.98$ ,  $p < .002$ , such that subjects correctly identified the type of feedback received. No other effects were significant.

Overall, there was strong evidence for the effectiveness of all manipulations in this experiment.

#### Effects of Leader Feedback

Two-way analysis of variance was used to examine the effects of leader feedback and target of feedback. Hypothesis 1 predicted that positive leader feedback would lead to higher integration, endorsement, task motivation and compliance than negative leader feedback. Inspection of Table 1 reveals that positive compared to negative leader feedback led to higher integration, endorsement and task motivation. There was no effect of positive versus negative leader feedback on either of the two compliance measures.

To examine the relative impact of positive and negative leader feedback, each leader feedback condition was compared with the no leader feedback control condition. Multiple t-tests revealed a marginally significant ( $p < .10$ ) difference on integration change scores between the no leader feedback condition ( $\bar{X} = 4.3$ ) and the negative leader feedback condition ( $\bar{X} = 3.1$ ). No significant differences were found between either the positive or negative leader feedback conditions and the no leader feedback condition on leader endorsement change scores. Comparing the mean change



Table 1  
Effects of Leader Feedback on Integration,  
Endorsement, Motivation and Compliance

| Source          | Dependent Measure              | M.S.   | $F(1, 36)$ | p    | Positive<br>Leader<br>Feedback<br>$\bar{x}$ | Negative<br>Leader<br>Feedback<br>$\bar{x}$ |
|-----------------|--------------------------------|--------|------------|------|---|---|
| Leader Feedback | Integration Scale <sup>a</sup> | 248.06 | 6.02       | .02  | + 4.7                                       | + 3.1                                       |
|                 | Endorsement Scale <sup>a</sup> | 517.56 | 3.70       | .06  | + 1.7                                       | - .06                                       |
|                 | Task Motivation<br>Scale       | 342.25 | 6.64       | .03  | 22.1  | 20.2  |
|                 | Compliance<br>(Agreements)     | 9.0    | .23        | N.S. | ----  | ----  |
|                 | Compliance (Time)              | 81.0   | .14        | N.S. | ----  | ----  |

<sup>a</sup>Analysis of variance on change scores since repeated measures were used.

score on the Task Motivation scale revealed a marginally significant difference ( $p < .10$ ) between the positive leader feedback ( $\bar{x} = 22.1$ ) and the no leader feedback ( $\bar{x} = 20.2$ ) conditions.

Hypotheses 2 and 3 predicted different interactions between the type and target of leader feedback, for the various dependent measures. No support was found for either hypothesis.

### Discussion

The intent of this study was to examine leader interventions in response to collective failure which could ameliorate the negative consequences of group failure. Analysis of the data indicated that the manipulation of collective failure was successful. Groups which received a failure performance evaluation on the first task responded with lower leader endorsement and lower group integration in comparison to groups which received no performance evaluation on the first task. This was an especially strong test of the collective failure induction since the comparison condition was not success feedback but no performance feedback.

The results suggest that positive leader feedback, following collective failure, is a more effective strategy than negative leader feedback. Groups which experienced positive compared to negative leader feedback demonstrated higher levels of group integration and perceived task motivation. In addition, from the standpoint of the leader, positive compared to negative leader feedback led to higher levels of endorsement. However, the effects of feedback are not very powerful. Compared to failing groups which received no leader feedback, the differences were, at best, only marginally significant. There was some indication that negative leader feedback tends to suppress group integration but has little effect on task motivation. Positive feedback, on the other hand, seems to increase task motivation but has little effect on integration. As a result no feedback may be an equally effective strategy when the group members do not expect feedback from the leader of the group, as was the case in this experiment. Perhaps if the no leader feedback condition reflected one where the leader refused to provide feedback, stronger differences may have been obtained between the feedback conditions and the no feedback condition. For example, leaders who refuse to give feedback may be perceived in a manner similar to leaders who provide negative feedback following collective failure.

Under such conditions the lack of feedback may be perceived a serious omission of a critical leadership function.

In addition, one might expect stronger effects of leader feedback when the leader remains an integral part of the group during the entire discussion period, rather than playing the advisory type role found in the second problem. Under more realistic circumstances a leader who is responsible for support, goal emphasis, and work facilitation may serve as either a more powerful inhibitor or facilitator of group interaction depending upon his feedback to the group following failure. Under these conditions, it might be expected that the effects observed in this experiment would be magnified greatly.

Neither measure of compliance varied as a function of leader feedback. This would seem to indicate that type of leader feedback did not influence the group members' perceptions of the quality of their leader's suggestions. It appears that the leader's suggestions were successful in influencing group members' responses across all experimental conditions, even though endorsement varied as a function of the type of feedback. This is supported by the finding that the average level of agreement with the leader's suggestions increased across all conditions following the leader's presentation of his rankings. Before the leader communicated his rankings the mean agreement was  $\bar{x} = 11.0$ . After the leader communicated his rankings to the group members the average level of agreement was  $\bar{x} = 14.1$ . Perhaps this was due to our confederate's presentation of his suggestions in such a smooth and confident manner, that they appeared worthy of merit despite group members' personal feelings toward the leader.

Varying the target of feedback did not produce differences on any of our dependent variables. It is possible the anonymity of the individual evaluations in this experiment served to diminish their effects relative to situations in which individual group members are publicly praised or criticized. In this regard, future research might usefully investigate the effects of public versus private praise and criticism on leader endorsement, group integration and task motivation.

The results of this experiment suggest that there are leader interventions which do have an impact on group functioning following failure. Comparison of the failure conditions with the no performance evaluation control condition in this experiment revealed that even in the context of a laboratory experiment, with short-lived, ad hoc, stranger

groups, failure had its well known detrimental effects on group integration and leader endorsement. Just as one might expect these effects to be far greater in "real" functioning work groups, one might also expect that the effects of leader feedback following failure would be magnified in such groups. This research is important because it goes beyond the effects of group failure to consider a question that has previously been ignored by management scholars, namely how leader behaviors either ameliorate or intensify the disintegrative effects of collective failure. This study, like most research, raises as many questions as it answers. What are the effects of the leader refusing to give feedback? Do the effects of public praise and criticism differ from those of praise and criticism given in private? Is compliance with a leader's task suggestions related to his level of endorsement? When does praise following failure serve to lower future efforts or levels of aspiration among group members? These questions and others should clearly receive attention from investigators in the future.

### REFERENCES

- Cherrington, D. L., Reitz, H. V., & Scott, W. E. Effects of reward and contingent reinforcement on satisfaction and task performance. Journal of Applied Psychology, 1971, 55, 531-536.
- Deutsch, M. Some factors affecting membership motivation and achievement motivation in a group. Human Relations, 1959, 12, 81-95.
- Dustin, P. Member reaction to team performance. Journal of Social Psychology, 1966, 69, 237-243.
- Greenberg, J., & Leventhal, G. S. Equity and the use of overreward to motivate performance. Journal of Personality and Social Psychology, 1976, 34, 179-191.
- Hollander, E. P., & Julian, J. W. Studies in leader legitimacy, influence and innovation. In L. Berkowitz (Ed.), Advances in experimental social psychology, Vol. 5. New York: Academic Press, 1970.
- Homans, G. C. Social behavior: Its elementary forms. New York: Harcourt-Brace, 1961.
- Julian, J. W., Hollander, E. P., & Regula, C. R. Endorsement of the group spokesman as a function of his source of authority, competence and success. Journal of Personality and Social Psychology, 1969, 11, 42-49.
- Meyers, A. Team competition and adjustment of group members. Journal of Abnormal and Social Psychology, 1962, 65, 325-332.
- Michener, H. A., & Lawler, E. J. The endorsement of formal leaders: An integrative analysis. Journal of Personality and Social Psychology, 1975, 31, 216-223.
- Price, K. Success, failure and no evaluation in participatory, autocratic and leaderless groups. Journal of Management, 1977, 2, 41-46.
- Shapiro, E. G. Effects of expectations of future interaction on reward allocations in dyads: Equity or equality. Journal of Personality and Social Psychology, 1975, 31, 873-881.
- Zander, A. Motives and goals in groups. New York: Academic Press, 1971.

## EXPERIMENT 2

### Ego-Enhancement/Defensiveness of Leader Attributions following Group Success and Failure and the Effect of these Attributions on Group Integration and Leader Endorsement

#### ABSTRACT

A double-substitution experiment was performed upon three-person laboratory groups. Subjects received success or failure feedback at random following a group coding task. Group leaders were asked to attribute the group's performance to either ability, effort, luck, or the task under either public or private conditions. Group members then received either no attribution, or ostensibly a leader attribution, to one of the above causal factors. After completing a second task, measures of group integration and leader endorsement were taken. The results revealed a strong tendency for leaders to use ego-enhancing/defensive attributions in evaluating their group's performance. This tendency was amplified in public as compared to private conditions. Measures of group integration and leader endorsement, however, were not significantly affected by leader attributions.

#### Introduction

Previous research has indicated that individuals are prone to attributing their successes to internal factors, such as ability or effort, while attributing their failures to external factors, such as bad luck or a difficult task (Fitch, 1970; Frieze and Weiner, 1971; Wortman et al., 1973; Luginbuhl et al., 1975). The theoretical framework for most of this research is based on the work of Heider (1944) who postulated that individual attributions and perceptions were subject to self-enhancing as well as self-protective biases.

Recent experiments by Schlenker (1975), Schlenker et al. (1976), Forayth and Schlenker (1977), and Schlenker and Miller (in press) have extended the study of attributions for success and failure to group situations. The

results of these experiments suggest that individual group members display self-enhancing/protective biases in their attributions following group success and failure which are quite analogous to those found in earlier investigations of reactions to individual success and failure. In commenting on the results of their research, Schlenker and Miller (in press) argue that "egocentrism" in groups bears similarity to other psychological phenomena identified in the social-psychological literature, such as "group mind" (LeBon, 1960), "groupthink" (Janis, 1972), and "diffusion of responsibility" (Wallach et al., 1962; Latane and Darley, 1970). It is interesting to note that while all of these phenomena have been linked with dysfunctional consequences for groups, it is possible that self-serving biases in perception may have functional consequences for groups as well. In this regard, the literature on group success and failure has indicated quite consistently that task groups which fail suffer losses in interpersonal attraction and member motivation (Deutsch, 1959; Meyers, 1965; Dustin, 1966; Zander, 1971) relative to those which succeed. Furthermore, studies have indicated that leaders of groups which fail suffer significant losses in endorsement from group members (Julian et al., 1969; Michener and Lawler, 1975) regardless of leadership style (Price, 1977). Given that success tends to be associated with group integration and failure with group disintegration, it may be possible that self-enhancing attributions following group success and self-defensive attributions following group failure can serve the useful function of increasing group integration and leader endorsement.

An additional question which has not been explored by researchers thus far is whether or not group leaders will display the same kinds of ego-enhancement/defensiveness in their attributions that have been found among individuals working alone and by group members following success and failure. Experiments by Schlenker et al. (1976) have all been concerned with essentially leaderless groups and, thus, ignore the very common situation in which leaders provide group members with feedback following task performance. The feedback can often be rich in causal imagery, suggesting why, in the leader's opinion, the group was successful or unsuccessful at its task. In providing this feedback, leaders may experience conflict between their desire to provide veridical information about the possible causes of success and failure and their desire to promote high group morale. Furthermore, leaders may engage in ego-enhancement/defensiveness in hopes of increasing or at least maintaining endorsement from group members following task success or failure.

An experiment was performed to test two separate sets of hypotheses regarding attributions following group success and failure. The first set of hypotheses are related to leader attributions following group success and failure.

Hypothesis 1 predicts that leaders will display ego-enhancement in their attributions for collective group success and ego-defensiveness in their attributions for collective group failure. Specifically, leaders of successful groups will make stronger attributions to ability and effort and make weaker attributions to the task and luck compared to leaders of unsuccessful groups. Hypothesis 2 predicts that ego-enhancement in leader attributions for success and ego-defensiveness in leader attributions for failure will be magnified under public compared to private conditions. Specifically, leaders of successful groups will tend to make stronger attributions to ability and effort, and weaker attributions to luck and the task under public compared to private conditions. On the other hand, leaders of failing groups will tend to make weaker attributions to ability and effort and stronger attributions to luck and the task under public compared to private conditions. To sum up our hypotheses in statistical terms, Hypothesis 1 predicts a second order interaction between group success/failure and attribution category, while Hypothesis 2 predicts a third order interaction between success/failure, attribution category and public/private attributions.

The second set of hypotheses are concerned with group members' responses to various kinds of leader attributions following success and failure. Hypothesis 3 predicts that ego-enhancing/defensive leader attributions following group success and failure will result in a higher level of group integration than will nonego-enhancing/defensive attributions. Finally, Hypothesis 4 predicts that ego-enhancing/defensive leader attributions following group success and failure will lead to a higher level of leader endorsement than nonego-enhancing/defensive attributions.

#### Overview of the Research

A laboratory experiment was performed which used a double-substitution experimental design. This design allowed for the simultaneous running of essentially two experiments, one on group leaders and the other on group members. Group members were tested in a 2 (success/failure) by 5 (type of leader attribution) fixed factorial experiment in which the major dependent variables were group integration and leader endorsement. Group leaders were tested in a 2 (success/failure) by 2 (public/private attribution) by 4



(attribution category) mixed factorial experiment in which the principle dependent variable was strength of causal attribution.

### Method

#### Subjects

Subjects in this experiment were 156 male undergraduates recruited from the subject pool of a large behavioral sciences in business class at a state university. Two subjects serving as group members had to be eliminated from the final data due to their inability to follow experimental instructions. In order to equalize cell sizes in the group member experimental conditions, data for an additional two subjects was discarded at random. The final sample thus consisted of 152 subjects with 10 subjects in each of the conditions of the group member experiment and thirteen subjects in each of the conditions of the group leader experiment.

#### Procedure

Subjects arrived at the laboratory in groups of three. All groups received the same general instructions from the experimenter. These instructions described the experiment as concerned with the task performance of nominal groups. Subjects were told that they would work as a team on two separate coding tasks. They were told that in their group a leader would be randomly chosen whose major role, in addition to performing the group task, would be to analyze and evaluate the group's performance. Subjects were told that their team's performance would be an average of their individual performances on each task. The instructions also indicated that the experimenter would be giving out bonus money for superior team performance to encourage team members to do their best. The bonus amounted to one dollar per team member on task one and two dollars per team member on task two if the team scored better than 50 percent of the teams who had already completed the task. Immediately after the general instructions, a team leader was chosen by a random draw of cards. The team members were then ushered into separate rooms and given their first coding task. The task involved translating a number of English paragraphs into code by substituting letters from a key at the top of the page. Subjects were given five minutes for the first coding task. They were told that their team's performance would be based upon the combined number of correct letters coded by all three team members during the 5 minute task

period. Subjects were signaled to begin and to stop coding over an intercom operated by the experimenter. Following the signal to stop, the experimenter collected the coding forms and handed the subjects a personal data questionnaire (intervening task) to complete while he ostensibly scored their team's performance. After about 10 minutes, the experimenter returned to each subject with a bogus team feedback sheet. Half the subjects, both team members and leaders, were randomly assigned to receive failure feedback; the other half received success feedback. In providing this feedback, the leader made the following comments:

"I've calculated your team's performance and translated it into a percentile score using the norms we have from previous groups completing the task.

As you can see, your team obtained a raw score of (actual score). Based upon the percentile ranges from our norm sample, this gives the team a percentile score of 86 (or 34), which means that your team did (only did) better than 86 (34) percent of the groups in our norm sample. Since the team is above (below) the 60 percentile, I am happy (sorry) to tell you that you do (do not) qualify for the \$1.00 bonus on the first coding task."

In the success condition, subjects were handed \$1.00 and told: "This is yours to keep." At this point in the experiment, procedures for leaders and team members diverged.

#### Leader Manipulations

Leaders were asked to evaluate their team's performance by considering a number of possible factors which may have influenced that performance. They were handed a leader performance evaluation sheet which contained four different causal factors labeled as follows: "ability or lack of ability," "effort or lack of effort," "good or bad luck," and "easy or difficult task." These factors were taken from the work of Frieze and Weiner (1971) and have been commonly used in research dealing with success/failure attributions. Leaders were instructed to rate each factor on a scale from one to nine in terms of the degree to which they felt it was important in influencing performance. In order to eliminate sequencing effects, so that attribution categories could be treated as a within-subjects-factor for leaders, each leader received one of the 24 possible random orderings of these factors on his evaluation form. Half the leaders were also assigned, at random, to a public attribution condition in which they were told that their evaluations would be

distributed to the other two team members as soon as they were finished. The remaining leaders were told that their evaluations would not be shown to the other team members since they were for the experimenter's own use. Attributions to the four causal factors constituted the sole dependent measure taken on leaders. The experimenter returned to the leaders' cubicle after he had finished making his attributions and proceeded to partially debrief the leader while enlisting his aid with the remainder of the experiment. The leader was asked to copy two of eight different experimentally prepared team evaluations on bogus leader evaluation sheets. These eight evaluations corresponded to attributions of task performance to either ability, effort, good luck or an easy task in the success condition or to lack of ability, lack of effort, bad luck or a difficult task in the failure condition. The particular attributions copied by the leader depended upon the experimental condition that each group member had been randomly and independently assigned to. The eight different attributions were as follows:

Success-Ability: "I think that ability played a major role. Team members seemed to have enough skill to do well on this task."

Success-Effort: "I think that effort played a major role. Team members worked hard enough to do well at this task."

Success-Luck: "I think that luck played a major role. Our team was just more lucky than other groups working at this task."

Success-Task: "I think the task itself played a major role. Coding is really an easy task for our team."

Failure-Ability: "I think that lack of effort played a major role. Team members did not seem to have enough skill to do well on this task."

Failure-Effort: "I think that lack of effort played a major role. Our team members did not work hard enough to do well at this task."

Failure-Luck: "I think that luck played a major role. Our team was just less lucky than other groups working at this task."

Failure-Task: "I think that the task itself played a major role. Coding is really a difficult task for our team."

One of the above leader attribution responses was then distributed to each group member following their completion of a job reaction questionnaire.

#### Group Member Manipulations

Immediately after receiving feedback on their team's performance, group members were asked to fill out a "Group Reactions Questionnaire." This questionnaire contained a series of seven interval bi-polar scales. Four items were used to measure group integration: satisfaction with group membership, enjoyment of working with group members on different tasks, enjoyment of meeting group members socially, and feeling like a member of an effective group. Four items were used to measure leader endorsement: satisfaction with leader's performance, willingness to have leader continue, legitimacy of leader, and support for leader. These items were adopted from Michener and Lawler (1975). In addition, an item was included to check on the success/failure manipulation: "How successful was your team on the first coding task?"

After collecting the above questionnaire, the experimenter explained to all group members that the group leader would be by shortly to distribute his evaluations of the team's performance. The team leader then entered each group member's cubicle and presented him with the attribution he had been randomly assigned to receive, saying: "Here is my evaluation of the team's performance on the first coding task." Leaders were instructed to leave immediately and say nothing else.

Group members were then given the second coding task. This task was identical to the first task except that the English paragraph and the code were changed; subjects were given 10 minutes to work and subjects were promised a \$2.00 bonus for team performance above the 60 percentile.

Following the second coding session, subjects filled out a second "Group Reactions Questionnaire." This questionnaire remeasured group integration and leader endorsement as well as checked on the leader attribution manipulation. Subjects were then brought together and debriefed. All subjects left the experiment with \$3.00 regardless of the experimental condition they were in.

## Results

### Manipulation Checks

Subjects' responses to the question, "How successful was your team on the first coding task?" were analyzed with a 2 x 5 analysis of variance. This analysis revealed only a highly significant main effect of success/failure,  $F(1, 90) = 148.84$ ,  $p < .001$ , with subjects in the success condition ( $\bar{x} = 5.10$ ) reporting greater success than those in the failure condition ( $\bar{x} = 2.66$ ).

Subjects were asked to indicate the leader attribution they received by checking one of the four attribution categories used in this study. Among the 80 subjects actually receiving leader attributions, 79 chose the attribution they had actually received. This result is highly significant,  $\chi^2(9) = 232.38$ ,  $p < .001$ .

### Leader Attributions

Mean leader attributions to ability, effort, luck and the task under public and private success and failure conditions are presented in Table 1 on the following page. These attributions were analyzed using a 2 x 2 x 4 mixed model analysis of variance. The results of this analysis are presented in Table 2 on the following page.

A significant main effect of success/failure with stronger attributions following success ( $\bar{x} = 5.89$ ) than failure ( $\bar{x} = 4.87$ ) indicates that leaders were more certain in their attributions for success than failure.

A significant main effect was also found for attribution category with significantly weaker attributions to luck than any of the other three categories ( $p < .01$ , Tukey test).

The significant interaction effect between success/failure and attribution category provides strong support for Hypothesis 1, concerning the ego-enhancement/defensive strategies of leader of successful and unsuccessful groups. Table 3 (page 22) presents the means for this interaction. As can be seen from this table, leaders of successful compared to unsuccessful groups make stronger attributions to ability ( $p < .05$ ) and effort ( $p < .01$ ), while tending to make weaker attributions to luck (Tukey test). Only the task attributions deviate in a different direction from that predicted, but not significantly. Another way to describe

Table 1  
Mean Leader Attributions in Experimental Conditions

|         |         | Ability | Effort | Luck | Task |
|---------|---------|---------|--------|------|------|
| Success | Private | 6.31    | 7.77   | 2.38 | 7.23 |
|         | Public  | 7.00    | 8.31   | 3.38 | 4.77 |
| Failure | Private | 6.15    | 5.77   | 2.77 | 5.46 |
|         | Public  | 4.23    | 4.92   | 3.69 | 5.92 |

Table 2  
Analysis of Variance Summary Table:  
Leader Attributions

| Source              | <u>SS</u> | <u>DF</u> | <u>MS</u> | <u>F</u> | <u>F</u> |
|---------------------|-----------|-----------|-----------|----------|----------|
| Between subjects    | 355.75    | 51        |           |          |          |
| A (success/failure) | 55.05     | 1         | 55.05     | 8.88     | .005     |
| B (private/public)  | 2.13      | 1         | 2.13      | 1        |          |
| AB                  | 1.07      | 1         | 1.07      | 1        |          |
| S/AB                | 297.50    | 48        | 6.20      |          |          |
| Within subjects     | 1313.25   | 156       |           |          |          |
| C (attribution)     | 396.63    | 3         | 132.21    | 24.93    | .001     |
| AC                  | 69.74     | 3         | 23.25     | 4.38     | .01      |
| BC                  | 28.12     | 3         | 9.37      | 1.78     |          |
| ABC                 | 55.17     | 3         | 18.39     | 3.47     | .025     |
| SC/AB               | 736.59    | 144       | 5.30      |          |          |
| Total               | 1669      | 207       |           |          |          |

**Table 3**  
**Mean Leader Attributions to Four Factors under**  
**Success and Failure**

|         | Ability | Effort | Luck | Task |
|---------|---------|--------|------|------|
| Success | 6.65    | 8.04   | 2.88 | 6.00 |
| Failure | 5.19    | 5.35   | 3.23 | 5.69 |

**Table 4**  
**Mean Integration Scores for Group Members**

|         | Leader Attribution<br>No Attribution | Ability | Effort | Luck  | Task  |
|---------|--------------------------------------|---------|--------|-------|-------|
| Failure | 24.10                                | 23.20   | 20.60  | 23.80 | 22.90 |
| Success | 26.20                                | 25.60   | 27.50  | 25.90 | 25.20 |

this interaction is that under success, leader attributions to effort are stronger than attributions to any other category; these differences are significant, at minimum at the .05 level (Tukey test); whereas, under failure, leader attributions to the task are strongest but not significantly different from effort or ability attributions.

Finally, the triple interaction between success/failure, public/private and attribution category, provides support for Hypothesis 2, suggesting that ego-enhancing/defensive strategies of leaders are magnified under public compared to private conditions. Inspection of Table 3 indicates that leaders of successful groups tended to increase the strength of their attributions to ability and effort, and decrease the strength of their attributions to the task under public compared to private conditions; whereas, leaders of failing groups tended to decrease the strength of their attributions to effort and ability and increase the strength of their attributions to the task and luck under public compared to private conditions. Thus, seven of the eight possible comparisons are consistent with the hypothesis that ego-enhancement following success and ego-defensiveness following failure are augmented in public compared to private conditions.

#### Group Member Reactions

Hypothesis 3 predicted the ego-enhancing/defensive leader attributions following group success and failure would lead to increased levels of group integration (Luginbuhl et al., 1975).

Table 4 presents mean integration scores in each of the 10 group member conditions as measured by combining responses to the four integration questions on the second "Group Reactions Questionnaire." These scores were analyzed with a 2 x 5 fixed factorial analysis of variance. This analysis revealed an expected main effect of success/failure on group integration,  $F(1, 90) = 27.66, p < .001$ , with subjects in the success condition reporting higher levels of group integration than those in the failure condition. A marginally significant success/failure x attribution interaction,  $F(4, 90) = 2.28, p < .07$ , offers only minimal support for the hypothesis that ego-enhancing/defensive leader attributions would lead to higher levels of group integration. Attributions to effort resulted in the lowest level of group integration under failure but the highest level of integration under success. This seems to support Hypothesis 3. It is important to note, however, that a similar pattern was not found for attributions to ability.



Furthermore, among failure subjects integration was highest with no leader attribution while among success subjects those receiving no leader attributions were second from the top on group integration.

Hypothesis 4 predicted that ego-enhancing/defensive leader attributions following group success and failure would lead to higher levels of leader endorsement by group members. Analysis of leader endorsement scale scores from the second "Group Reactions Questionnaire" offered no support for this hypothesis. No significant main effects or interactions were found on this measure.

### Discussion

The results of this experiment are largely supportive of our hypothesis that group leaders will engage in ego-enhancing/defensive attribution following group success and failure. Thus, a phenomenon which has been found to occur among individuals working alone and in groups can be extended to group leaders as well.

In addition to the above, our findings indicate that leader attributions following success and failure may not only serve the interest of enhancing and/or maintaining the leaders self-esteem, but also may be used by leaders in an attempt to either enhance the esteem they receive from others or to promote group integration. In this regard, it was hypothesized and demonstrated that the tendency for leaders to engage in ego-enhancing/defensive attribution is magnified under public as compared to private conditions. Since leaders were not questioned in regard to their motives for public attribution, we do not know whether increased group integration, endorsement or other factors such as increasing group motivation provided the rationale for the leader attributions. Furthermore, if the above strategies were not salient to the leader, then one could expect even stronger ego-enhancement/defensive attributions given a specific set to increase endorsement, integration or motivation of the group members. These would certainly be interesting questions to investigate in future research.

Our hypotheses regarding the impact of various leader attributions, following group success and failure, on group integration and leader endorsement received practically no support. There was a tendency for effort attributions to decrease integration following failure and increase integration following success but this tendency was not paralleled in any of the other attribution conditions. These results

suggest quite clearly that whatever the leader's motives for ego-enhancement/defensiveness in the attributions he gives to members of his group following task performance, these attributions had only minimal consequences on group functioning in the situation under study. It would be interesting to speculate about those conditions where leader attributions would have a more powerful impact upon the group. Perhaps defensive attributions would have had a greater impact in this study if they were made by an expert leader. In this study the group members had no information about the leader's level of competence. Group members, under these conditions, may be more willing to accept the leader's explanation of the group's success or failure. In addition, one might suggest that the leader's attributions may have been more salient to the group members if the group members were aware of their own performance and not just the overall performance of the group. That is, leader attributions may appear to be irrelevant given no information about one's contributions to the group's efforts.

## REFERENCES

- Deutsch, M. Some factors affecting membership motivation and achievement motivation in a group. Human Relations, 1959, 12, 81-95.
- Dustin, P. Member reaction to team performance. Journal of Social Psychology, 1966, 69, 237-243.
- Fitch, G. Effects of self-esteem, perceived performance, and choice on causal attributions. Journal of Personality and Social Psychology, 1970, 16, 311-315.
- Forsyth, D. R., & Schlenker, B. R. Attributing the causes of group performance: Effects of performance quality, task importance, and future testing. Journal of Personality, 1977, 45, 220-236.
- Frieze, I., & Weiner, B. Cue utilization and attributional judgments for success and failure. Journal of Personality, 1971, 39, 591-605.
- Heider, F. Social perception and phenomenal causality. Psychological Review, 1944, 51, 358-374.
- Janis, I. L. Victims of groupthink: A psychological study of foreign-policy decisions and fiascoes. Boston: Houghton Mifflin, 1972.
- Julian, J. W., Hollander, E. P., & Regula, C. R. Endorsement of the group spokesman as a function of his source of authority, competence and success. Journal of Personality and Social Psychology, 1969, 11, 42-49.
- Latane, B., & Darley, J. M. The unresponsive bystander: Why doesn't he help?. New York: Appleton-Century-Crofts, 1970.
- LeBon, G. The Crowd. New York: Viking Press, 1960.
- Luginbuhl, J. E. R., Crowe, D. H., & Kahan, J. P. Causal attributions for success and failure. Journal of Personality and Social Psychology, 1975, 31, 86-93.
- Meyers, A. Team competition and adjustment of group members. Journal of Abnormal and Social Psychology, 1965, 65, 325-332.

- Michener, H. A., & Lawler, E. J. The endorsement of formal leaders: An integrative analysis. Journal of Personality and Social Psychology, 1975, 31, 216-223.
- Price, K. Success, failure and no evaluation in participatory, autocratic and leaderless groups. Journal of Management, 1977, 2, 41-46.
- Schlenker, B. R. Group members' attributions of responsibility for prior group performance. Representative Research in Social Psychology, 1975, 6, 96-108.
- Schlenker, B. R., & Miller, R. S. Group cohesiveness as a determinant of egocentric perceptions in cooperative groups. Human Relations, in press.
- Schlenker, B. R., Soraci, S., Jr., & McCarthy, B. Self-esteem and group performance as determinants of egocentric perceptions in cooperative groups. Human Relations, 1976, 29, 1163-1176.
- Wallach, M. A., Kogan, N., & Bem, D. J. Group influence on individual risk taking. Journal of Abnormal and Social Psychology, 1962, 65, 75-86.
- Wortman, C. B., Costanzo, P. R., & Witt, T. R. Effects of anticipated performance on the attributions of causality to self and others. Journal of Personality and Social Psychology, 1973, 27, 372-381.
- Zander, A. Motives and goals in groups. New York: Academic Press, 1971.

### EXPERIMENT 3

#### Group Member Endorsement and Compliance towards the Leader As A Function of Leader Competence and Group Member Competence

#### ABSTRACT

In laboratory groups the competence of the leader and the competence of the group members were independently manipulated. Results indicated that leader competence was strongly related to leader endorsement, but that compliance with the problem solving suggestions of the leader was related to group member competence for males but not for females.

#### Introduction

Homans (1961) and Hollander (1964) have hypothesized a positive relationship between the level of endorsement a leader enjoys within a group and his ability to influence the members of that group. Here, it is suggested that the influence attempts of a highly endorsed leader should be perceived as more legitimate in contrast to the influence attempts of a leader low in endorsement.

Studies which have examined endorsement as a dependent variable (Hamblin, Miller and Wiggins, 1961; Julian, Hollander and Regula, 1969; Michener and Burt, 1975) have indicated that the task ability or competence of the leader is a critical determinant of his continued endorsement. However, there appears to be less agreement concerning the consequences of endorsement on group member compliance with the suggestions or demands of the leader. Both Hollander and Julian (1970) and Michener and Burt (1975) reported different findings concerning the endorsement-compliance hypothesis. There were many differences between these studies in terms of the methods used. However, it is our contention that specific methodological considerations in both studies precluded an adequate test of the endorsement-compliance hypothesis.

In the Hollander and Julian study it appeared that the competence of the group member was unintentionally confounded with the manipulation of leader competence. Thus, while this study has been used to support the endorsement-compliance hypothesis, it may simply indicate that group member compliance is a function of the subject's own perceived competence and not leader endorsement. In the Michener and Burt (1975) study the task competence of the leader appeared to have had little relevance for the group members, as the rewards for noncompliance may have been greater than the rewards for compliance. Thus, to adequately test the endorsement-compliance hypothesis, one would need to independently manipulate both leader competence and group member competence in a situation where the task competence of the leader has considerable relevance for the group members. Under these conditions one might be able to more clearly specify the relationship between leader competence, group member competence, and the dependent variables of leader endorsement and group member compliance.

The purpose of this study was to reexamine the factors related to leader endorsement and to determine if the same factors are related to group member compliance with the problem solving suggestions of a leader. It was hypothesized that high compared to low competent leaders would enjoy higher levels of group member endorsement as leader. It was also predicted that group member compliance with the problem solving suggestions of the leader would be a function of the interaction of leader competence x group member competence. When the group member was low in competence one would expect greater compliance with the problem solving suggestions of a leader high compared to low in competence. When the group member was high in competence there should be no differences in compliance rates as a function of the level of leader competence.

## EXPERIMENT WITH MALE GROUPS

### Method

#### Subjects

Subjects volunteered from introductory sections of behavioral science courses and received course credit for research participation. A total of 70 males participated in this study.

### Experimental Design

Three independent variables were manipulated. These included leader competence (high versus low), group member competence (high versus low) and the type of leader suggestion (quality versus quantity). This resulted in a  $2 \times 2 \times 2$  factorial design. There were eight observations per cell. Six observations were eliminated because the subjects did not understand the instructions or guessed the manipulations.

### Overview of Procedures

Subjects were seated in the experimental laboratory in groups of four or five depending on the number of subjects who signed up for that specific time period. Copies of the general instructions were distributed indicating that the experiment dealt with nominal group performance, where individuals work separately on a problem, but the efforts of all group members are combined to compute a group performance score.

Subjects were instructed that they would be working as a team of cryptologists whose task was to translate into code an important message. To acquaint the group members with the type of skills involved and provide practice for the actual message coding task, the group members were instructed to first work on a practice coding task. After they completed the practice task they would receive feedback about how well they did. Following the practice problem and feedback they would work on the actual message coding task as members of a nominal group.

The importance of the nominal group leadership role was then outlined. Subjects were told the leader would play an important advisory role on the message coding task. The leader of the group would work on the message coding task prior to the group members and use his experience with the problem to make suggestions to the group members to help improve their performance on the task.

Following these instructions a leader was randomly selected for each group. After leader selection, the group members were seated in separate rooms and the practice task was distributed. Instructions for the practice task requested that group members code a series of numbers into their equivalent symbols using a special coding form. Each group member worked on the practice coding task, individually, for 5 minutes. In addition, at this time, each group member was told he was member "B" in the group.

### Manipulation of Leader and Group Member Competence

Leader and group member competence were independently manipulated by providing bogus individual performance feedback on the practice task. Leaders and subjects who received high competence feedback were told that they scored better than 108 of the 122 people who had previously completed this task. Their score placed them in the percentile range of 81-100. Leaders and subjects who received low competence feedback scored better than 38 of the 122 people who had previously completed this task. Their corresponding percentile range score was 41-60.

Subjects were told that their scores were based on the number of correctly coded letters. Each subject received, privately, a feedback form outlining his score and the scores of the other members of his group. Thus, each subject knew how well he performed, how well his leader performed and how well the other members of his group performed on the practice task. In four-person groups there were always two high performing group members and two low performing group members. In a five-person group an additional score indicated that the fifth member of the group scored better than 86 of the 122 people who had completed this task with the percentile range score of 61-80. These procedures kept group performance constant across all conditions, and were unlikely to produce different group performance expectations on the message coding task.

### First Questionnaire Administration

Immediately after performance feedback on the practice problem, a questionnaire measuring leader endorsement, leader competence and subject competence was administered. Questions measuring endorsement were adopted from Michener and Lawler (1975). The endorsement scale items included: How satisfied are you with the performance of the group leader on the first coding task?; How legitimate is it for the leader of your group to occupy his position as leader?; How willing are you to have the person who served as leader head the group on the second coding task?; To what extent do you support or oppose the leader of your group? Other questions measured the success of the experimental manipulation of leader competence and subject competence. Questions included: How competent were you on the first coding task?, and How competent was your leader on the first coding task? Each of the questions was answered along a seven point scale.



After completion of the questionnaire subjects were told the instructions for the message coding task would be distributed in about 10 minutes after the subjects completed a personal data questionnaire. (Subjects had started this questionnaire earlier while the experimenter was scoring their answers to the practice task.) In addition, while they were completing the personal data questionnaire the leader of their group would be working on the message coding task. After completing this task the leader would be allowed to make suggestions to the group members to help maximize their performance. (The personal data questionnaire was an intervening task which was not scored. It was introduced to provide the experimenter with time to score the practice problem and provide the leader with time to work on and make suggestions to maximize performance on the message coding task.)

#### The Message Coding Task

After 10 minutes the experimenter and the leader returned to each subject. The experimenter collected the intervening task (personal data questionnaire) and distributed the subjects' instructions for the message coding task. The leader distributed his instructions for the message coding task saying, "Here is a copy of my instructions for the message coding task and my suggestions to help you maximize your performance." The experimenter said, "Please read both sets of instructions carefully, and I'll return in 5 minutes to give you a copy of the message coding task and the special code to be used in coding the message."

The instructions the subjects received indicated they would have 5 minutes to work on the message coding task. To encourage each of the group members to work hard on the problem each member of the group could earn a \$3.00 bonus if the group's performance was better than 70 percent of the groups which have completed this task previously. In addition, group members were told a number of other student groups had previously completed this task so there were some very clear norms to compare their performance with. The better each group member's performance, the better would be the average group performance score. Thus, each group member including the leader contributed equally to the performance of the group. Only the group's average performance score would be used in determining qualification for the bonus. No individual feedback would be given.

The leader's instructions, which the group members also received, included a section indicating that he could help facilitate the performance of the group if he could think of

some ways in which the group could maximize their performance. At the bottom of the leader's instructions was a space where he responded to the question, "I think the group members can maximize their performance by:" Ostensibly, the leader completed this section after working for 5 minutes on the message coding task.

Finally, the instructions indicated that the performance of each group member would be evaluated scoring one point for each correctly coded letter and subtracting one point for each incorrectly coded letter.

#### The Compliance Situation

Compliance was manipulated by varying the suggestions that the leader made to improve performance on the message coding task. Half of the group members received a quality suggestion which stated, "Let's code slowly and try not to make any errors. We lose one point for each incorrect letter. If we make too many errors we will not get enough points to do well, let's code less but get it right." The remaining group members received a quantity suggestion which stated, "Let's code as fast as we can and not worry about errors. We get one point for each correct letter. If we worry about not making any errors we will not code enough letters or get enough points to do well. Let's code as much as we can and not worry about mistakes."

The cooperation of the leader was obtained to assist in the quality/quantity manipulation. After the leaders completed the message coding task the purpose of the experimenter was explained to the leaders. They were asked to collaborate with the experimenter in conducting the experimental manipulations by writing the above standardized quality or quantity suggestion on their instruction form and then indicating to the group members that this was their suggestion for improving the group's performance on the message coding task. None of the leaders refused. All of the leaders copied the messages as indicated and the type of message a subject received was randomly assigned.

After working for 5 minutes, the message coding task was collected and a second questionnaire was distributed to the subjects while the experimenter, ostensibly, evaluated their performance. After 5 minutes, the experimenter returned to collect the questionnaires and debriefed the subjects.

### Second Questionnaire Administration and Measurement of Compliance

The second questionnaire contained a question designed to check the effectiveness of the quantity versus quality manipulation and evaluate the subjects' perception of the leader's suggestion. To check the quantity/quality manipulation, subjects responded to an open-ended question asking them to briefly describe the leader's suggestion for maximizing performance on the message coding task. In addition, subjects responded to the following question along a seven point scale: How would you evaluate the suggestion that the leader of your group made to help maximize your group's performance on the message coding task? An independent rater, unaware of the experimental manipulation, coded responses to the open-ended question into a quantity, quality or ambiguous category.

The dependent measure of compliance was the number of correctly coded letters on the message coding task. Analysis of variance procedures were used, with the number of letters correctly coded on the practice task employed as a covariate.

### Results

#### Success of Experimental Manipulations

Two questions dealt with the success of the experimental manipulations of leader competence and group member competence. As expected, a significant main effect was found for the manipulation of group member competence,  $F(1, 56) = 5.21, p < .03$ , with group members in the high competence condition reporting higher perceived self-competence ( $\bar{x} = 5.13$ ) compared to group members in the low competence condition ( $\bar{x} = 4.36$ ). In addition, a significant leader competence x group member competence interaction was found,  $F(1, 56) = 6.11, p < .02$ . The nature of this interaction suggested that when the leader was high in competence, varying the level of group member competence produced different perceptions of perceived self-competence such that high ( $\bar{x} = 5.62$ ) compared to low ( $\bar{x} = 4.19$ ) competent group members reported higher perceived self-competence,  $p < .05$ . When the leader was low in competence, varying the levels of group members competence did not produce significant differences in perceived self-competence.

To check on the effectiveness of the manipulation of leader competence, group members rated the perceived

competence of the leader. As expected, a significant main effect was found for the manipulation of the leader competence variable,  $F(1, 56) = 29.39$ ,  $p < .001$ , such that group members in the high leader competence condition reported higher leader competence ( $\bar{x} = 5.75$ ) compared to group members in the low leader competence condition ( $\bar{x} = 4.09$ ). Perceptions of leader competence were also influenced by the manipulation of subject competence,  $F(1, 56) = 14.32$ ,  $p < .001$ , such that subjects who were low in competence perceived their leader higher in competence ( $\bar{x} = 5.49$ ) than group members who were high in competence ( $\bar{x} = 4.35$ ). Finally, a difference in perceived leader competence was found for the quality/quantity variable,  $F(1, 56) = 4.61$ ,  $p < .04$ . Results indicated higher perceived leader competence when the leader made a quantity suggestion ( $\bar{x} = 5.25$ ) compared to a quality suggestion ( $\bar{x} = 4.50$ ). This effect was unexpected since the manipulation of the leader's suggestion followed the ratings of perceived leader competence.

One other question checked the ability of the group members to recall the suggestion that the leader made to improve the group's performance on the message coding task. A significant main effect was found for the quality/quantity variable,  $F(1, 56) = 26.84$ ,  $p < .001$ , such that subjects were able to accurately recall the type of suggestion their leader made to maximize their performance on the message coding task.

Thus, the manipulations of leader competence, and subject competence were considered successful. In addition, subjects were able to recall the type of suggestions their leader made within the appropriate conditions.

### Endorsement

Hypothesis 1 predicted a main effect of leader competence on endorsement. Support was found for this hypothesis as group members indicated higher endorsement for high competent leaders ( $\bar{x} = 22.23$ ) compared to low competent leaders ( $\bar{x} = 15.23$ ),  $F(1, 56) = 51.21$ ,  $p < .001$ . There was also a significant second order interaction of leader competence x subject competence on endorsement,  $F(1, 56) = 4.11$ ,  $p < .05$ . This interaction is presented in Figure 1 on the following page. The nature of this interaction indicates that the decrease in endorsement for low competent compared to high competent leaders was greater when the group member was high compared to low in competence. This suggests that high competent group members were less positive in their endorsement of low competent leaders ( $\bar{x} = 13.88$ ) compared to

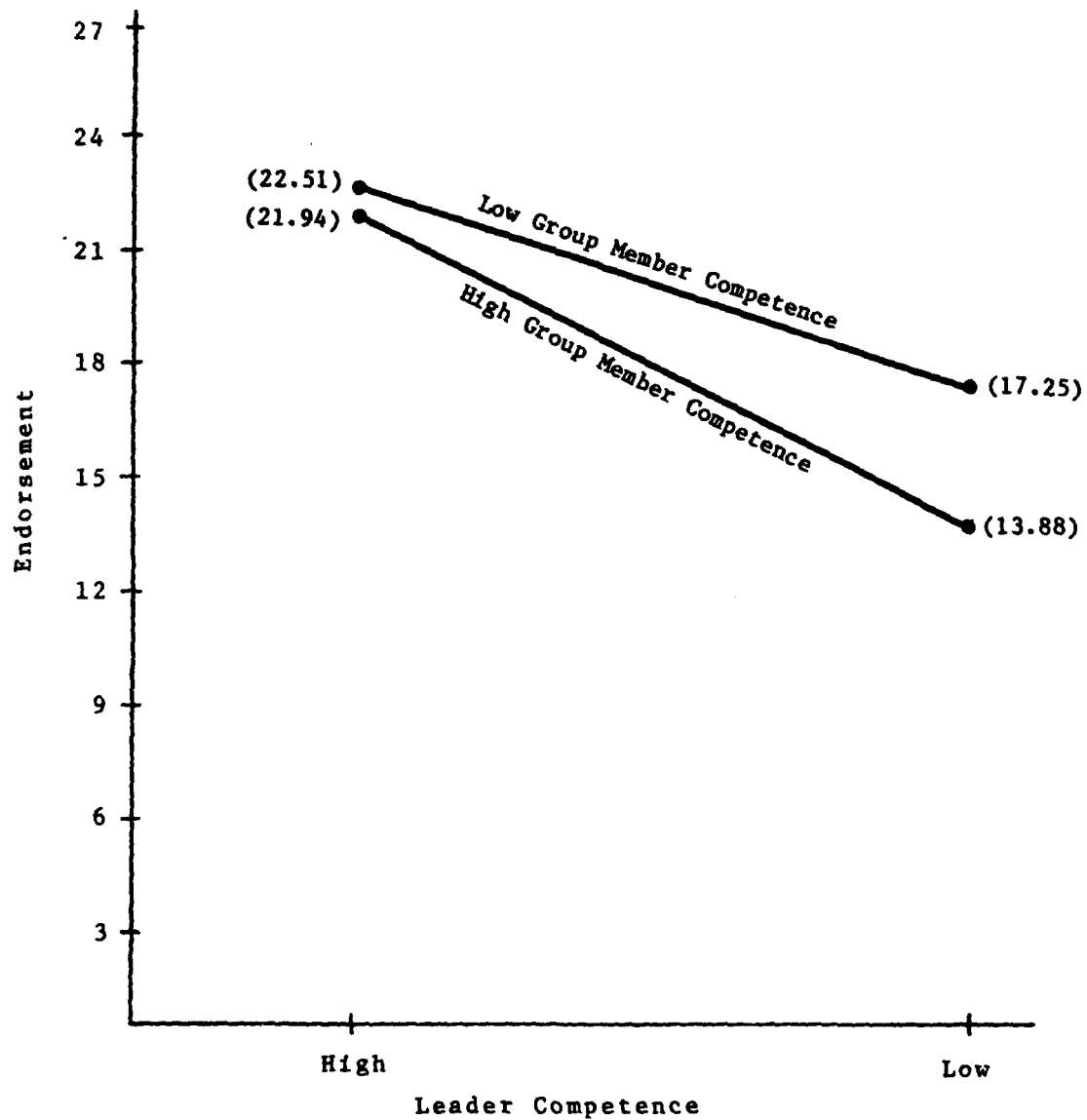


Figure 1  
The Interaction of Leader Competence x Group Member  
Competence on Endorsement

the level of endorsement accorded low competent leaders by low competent group members ( $\bar{x} = 17.25$ ),  $p < .10$ .

#### Compliance with the Leader's Suggestions

Hypothesis 2 predicted an interaction such that low competent group members would more likely comply with the suggestion of a leader who was high compared to low in competence. When the group member was high in competence no difference in compliance was expected as a function of the leader's level of competence. No support was found for this prediction. However, there was a significant second order interaction of group member competence x quality/quantity on compliance,  $F(1, 56) = 4.06$ ,  $p < .05$ . This interaction is presented in Figure 2 on the following page. The nature of this interaction suggests that high and low competent group members did not differentially comply to the quality suggestion of the leader by correspondingly adjusting their performance on the message coding task. However, there was a tendency for high and low competent group members to differentially respond to the quantity suggestion of the leader. Multiple t-tests indicated a marginally significant difference such that high compared to low competent subjects coded fewer letters under a quantity suggestion from the leader,  $p < .10$ .

### EXPERIMENT WITH FEMALE GROUPS

#### Method

##### Subjects

Females volunteered from introductory sections of management and behavioral sciences and received course credit for research participation. A total of 64 females participated in this study.

##### Experimental Design and Procedures

The same experimental design and procedures employed in the study with males was used for this study with females. The female study was started immediately after the last male subject was run. For these reasons the data was analyzed separately rather than combining male and female subjects into a single analysis.

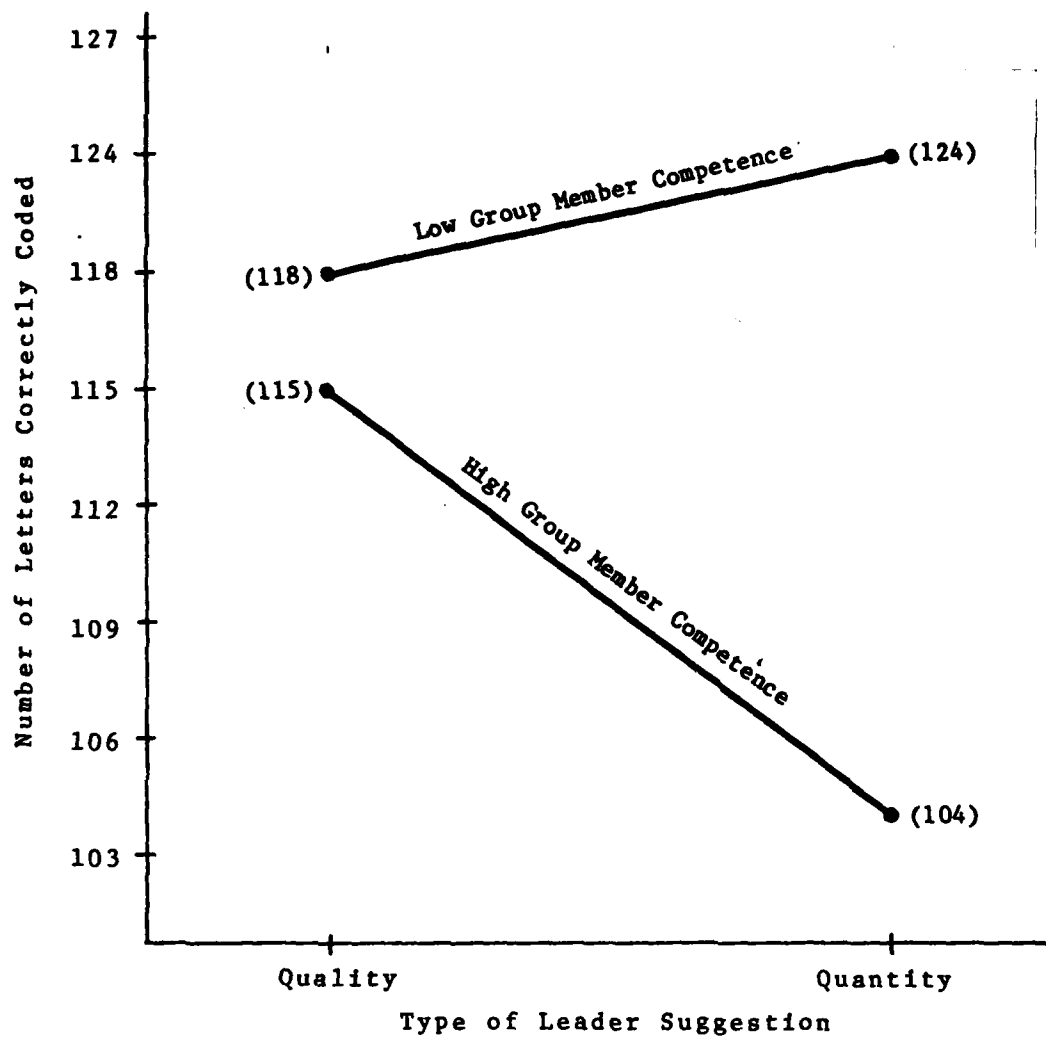


Figure 2

The Interaction of Group Member Competence x Type  
of Leader Suggestion on Compliance

## Results

### Success of Experimental Manipulations

A significant main effect was found for the manipulation of group member competence,  $F(1, 56) = 26.80$ ,  $p < .000$  with group members in the high competence condition reporting greater perceived self-confidence ( $\bar{x} = 5.53$ ) compared to group members in the low competence condition ( $\bar{x} = 4.12$ ). Similarly, there was a significant main effect of the leader competence manipulation on perceived leader competence,  $F(1, 56) = 114$ ,  $p < .000$ , such that high competence leaders ( $\bar{x} = 6.25$ ) were perceived as more competent compared to low competent leaders ( $\bar{x} = 4.09$ ). In addition, perceptions of leader competence were influenced by the manipulation of group member competence,  $F(1, 56) = 6.95$ ,  $p < .01$ , such that low competent group members ( $\bar{x} = 5.43$ ) perceived their leader as more competent than high competent group members ( $\bar{x} = 4.90$ ).

Finally, with respect to the ability to recall the leader's suggestion to facilitate the group's performance, a significant main effect was found for the quantity/quality variable,  $F(1, 56) = 19.59$ ,  $p < .000$ , such that subjects were able to recall the type of suggestion their leader made.

### Endorsement

Hypothesis 1 predicted a main effect of leader competence on leader endorsement. As expected, leader endorsement was affected by the leader competence manipulation,  $F(1, 56) = 36.43$ ,  $p < .000$ . High competent leaders were more highly endorsed ( $\bar{x} = 23.28$ ) than low competent leaders ( $\bar{x} = 17.46$ ). In addition, leader endorsement was influenced by the manipulation of group member competence,  $F(1, 56) = 6.73$ ,  $p < .02$ , such that low competent group members more highly endorsed their leader ( $\bar{x} = 21.62$ ) compared to high competent group members ( $\bar{x} = 19.12$ ).

### Compliance with the Leader's Suggestion

Hypothesis 2 predicted an interaction of leader competence x group members competence on compliance. No support was found for this prediction. The only significant effect on compliance was the manipulation of the quantity/quality variable,  $F(1, 56) = 9.52$ ,  $p < .003$ . Under a quantity suggestion from the leader group members coded more



letters ( $\bar{x}$  = 142.90) than under a quality suggestion from the leader ( $\bar{x}$  = 127.40).

### Discussion

The results for both males and females support the findings of Hollander and Julian (1970) and Michener and Lawler (1975) suggesting that the task competence of the leader is a significant determinant of his level of endorsement. In addition, this study indicates that the task competence of the group member may also influence the level of leader endorsement. For females, low competent group members were more generous in their endorsement of their leaders, irrespective of the leader's level of competence. For males, low competent group members offered low competent leaders higher endorsement than high competent members. There were no differences when the leader was high in competence.

With respect to leader influence, neither the male nor the female data supported a direct link between the level of endorsement a leader enjoys and the willingness of the group members to comply with the leaders problem solving suggestions. This is consistent with the findings of Michener and Burt (1975) and inconsistent with the position of Hollander and Julian (1970). Furthermore, our own hypothesis suggesting that compliance was a function of the interaction of leader competence x group member competence was not supported. However, the male data does tentatively suggest that the level of group member competence may be an important variable in determining compliance. Results indicated a trend, such that low compared to high competent group members coded more letters under a quantity suggestion by the leader. If the level of group member competence had also produced differences in response to the leader's quality suggestion, such that low competent compared to high competent group members coded fewer letters, then stronger support would have been obtained for the importance of the subject competence variable.

For males, the failure to find differences based on the quality suggestion may be related to understanding the forces that led to differences on the quantity variable. The differences on the quantity variable may have been due to an attempt to comply with the leader's suggestion by the low competent group members and a tendency towards reactance by the high competent group members, since low competent group members increased the number of letters coded under a quantity compared to quality suggestion and high competent

group members decreased the number of letters coded under a quantity compared to a quality suggestion. The lack of differences when the leader expressed a quality suggestion may have been due to an unanticipated difficulty group members may have had in adjusting the quality of their performance. For low competent group members trying to improve their performance by concentrating on quality and coding fewer letters may have been difficult given the situational demands to code as many letters as possible in 5 minutes. In addition, since the number of errors on this self-monitoring task was very low, the performance variable of quality may also have been insensitive to change. On the other hand, yielding to a suggestion to increase quantity may not have suffered the same restriction as one would be able to work harder, if one desired, without a noticeable loss of quality. In this regard, it should be noted that the number of errors on the message coding task did not differ as a function of the type of suggestions (quantity versus quality) indicating that additional letters could have been coded without a corresponding loss in quantity.

In addition, for the high competent subjects demonstrating reactance may have been easier as a function of a quantity compared to a quality suggestion. Working slower in response to a demand for more output would be a likely outcome but subjects might be more reluctant to work faster in response to a quality suggestion since more effort is involved. Thus, the nature of the quality suggestion may have precluded the finding of strong compliance effects.

For female subjects the nature of compliance was different from that found for males; females coded more letters under a quantity compared to a quality suggestion by the leader. While we have no baseline measurement to determine if females decreased production under a quality suggestion or increased production under a quantity suggestion, it might be suggested, if our reasoning concerning the restrictive nature of the quality variable is correct, that this difference was due to an increase in productivity in the quantity condition. That females did not respond to the leader's suggestion as a function of their own level of competence is interesting. This suggests that for females, in this study, a general tendency to comply with the leader may have masked any differential effects based on competence.

#### REFERENCES

- Hamblin, R. L., Miller, K., & Wiggins, J. A. Group morale and the competence of the leader. Sociometry, 1961, 24, 295-311.
- Hollander, E. P. Leaders, groups and influence. New York: Oxford University Press, 1964.
- Hollander, E. P., & Julian, J. W. Studies in leader legitimacy, influence and innovation. In L. Berkowitz (Ed.), Advances in experimental social psychology, Vol. 5. New York: Academic Press, 1970.
- Homans, G. C. Social behavior: Its elementary forms. New York: Harcourt-Brace, 1961.
- Julian, J. W., Hollander, E. P., & Regula, C. R. Endorsement of the group spokesman as a function of his source of authority, competence and success. Journal of Personality and Social Psychology, 1969, 11, 42-49.
- Michener, H. A., & Burt, M. R. Components of 'authority' as determinants of compliance. Journal of Personality and Social Psychology, 1975, 31, 606-614.
- Michener, H. A., & Lawler, E. J. The endorsement of formal leaders: An integrative analysis. Journal of Personality and Social Psychology, 1975, 31, 216-223.

## EXPERIMENT 4

### Compliance with a Leader's Suggestion As A Function of Leader/Group Member Competence and Reciprocity

#### ABSTRACT

In laboratory groups the competence of the leader and group members were independently manipulated under reciprocal and nonreciprocal problem solving conditions. Results suggested that compliance with the leader was a function of the interaction of leader by group member competence. In addition, an internal analysis suggested that reciprocity was positively related to compliance among group members with high quality suggestions and negatively related to compliance among group members with low quality suggestions.

#### Introduction

The idea that technical competence is directly related to potential influence in task oriented groups is a recurrent theme in social-organizational psychology (Cartwright and Zander, 1968; French and Raven, 1959; Katz and Kahn, 1978). Since leadership is commonly defined as the exercise of influence, it is not surprising that various authors have attempted to develop both theoretical and empirical links between task competence and leadership. Theoretically, task competence has been linked with legitimate authority (Hollander, 1964; Weber, 1947), expert power (French and Raven, 1959), and the power which derives from holding a valuable resource in social exchange (Emerson, 1964; Homans, 1961; Thibaut and Kelley, 1959). Empirically, the link between task competence and leadership is surprisingly uncertain.

Field investigations of the relationship between task competence and leadership are very rare. Three studies, however, may be noted. Student (1968) measured the perceptions of supervisory influence in an appliance factory and correlated these with the performance of work groups. Referent power was found to correlate most strongly with performance, followed closely by expert power. Reward, coercive, and legitimate power were not significantly correlated with performance. While these results are

interesting, strong reservations exist in regard to the direction of causality in this data. It is likely that work group performance may have influenced perceptions of supervisory influence, with successful work groups reporting better feelings about and attributing more competence to their supervisors than unsuccessful groups (Staw, 1975). Patchen (1974) studied the characteristics of individuals who were reported by colleagues to be influential in various purchasing decisions at eleven business firms. Expertise was the second most frequently mentioned characteristic of influentials, while being affected by the decision was the most frequently mentioned characteristic. Both authority and responsibility were low on the list. Finally, Tannenbaum (1974) asked workers and supervisors from industrial plants in five different countries, including the United States, to respond to the following question: "When you do what your immediate supervisor requests you to do on the job, why do you do it?" In all five countries, task competence was rated as more important than either reward, coercive, or referent power. The only two factors rated as more important than competence were duty and organizational functioning which can both be viewed as part of legitimate power. Although both the Patchen (1974) and Tannenbaum (1974) studies suggest that competence may be an important attribute for those who wish to lead, these studies do not directly support a link between competence and compliance. Individuals are often ignorant of the factors that influence their behavior; while social desirability may lead to distortion, with individuals less willing to admit compliance for reward, fear of punishment, or friendship.

Although laboratory experiments on task competence and leadership are more numerous than field investigations, the results of these experiments are highly equivocal. It has been demonstrated that task competence is a significant factor in the emergence of leaders from task-oriented groups (Ginter and Lindsold, 1975; Jaffe and Lucas, 1969). Although the above finding is of some interest, it does not really address the question of whether task competence relates to leadership when leadership is defined as the exercise of influence over others.

Hollander (1960) and Hollander and Julian (1970) both used Asch type paradigms to examine the relationship between task expertise and influence. Both studies reported increased agreement with the competent group member's judgments. In the former study, the competence of the critical group member was manipulated by feedback that he gave the correct answer and the remaining group members gave the incorrect answer over a series of 15 trials. In the latter

study, the competence of the group leader was held constant and the competence of the group members was manipulated above and below the leader. Problems in interpreting these manipulations makes it difficult to determine whether leader competence, the lack of group member competence, or both, produced the effect. In the Hollander (1960) study it is possible that increased influence may have been a result of the greater competence of the influential group member, the relative lack of competence of the conforming group members or the interaction of both variables. Manipulation check data from the Hollander and Julian (1970) study make it clear that the group member's own self-confidence was manipulated rather than the perceived competence of the group leader suggesting a relationship between group member self-confidence and conformity rather than a relationship, as the authors indicate, between leader competence and group member conformity.

The results of an experiment by Mulder and Wilke (1970) presents similar problems. Task expertise was manipulated by giving one member of a dyad more information concerning the problem than the other member. Results indicated greater influence, as expected, in the high expert condition, where individuals had considerably more information at their disposal. While this study indicates that task expertise may be a salient variable, it does not clarify whether group members comply as a result of the expertise demonstrated by others, their own lack of expertise, or only when both factors are present.

An experiment by Mausner and Bloch (1957) is unique in having manipulated the competence of each member of a dyad independently in an ambiguous judgment task. Their results indicated that low compared to high competent subjects converged more towards the judgments of their partner. In addition, when a dyadic partner was high compared to low in competence, there was greater convergence towards the high competent partner's judgments. The problem with this study is that no cell means were reported making it difficult to assess whether or not these main effects were due to a significant interaction.

Finally, a more recent experiment by Michener and Burt (1975) examined the relationship between leader endorsement and group member compliance. Endorsement is an attitudinal variable reflecting the perceived support of the leader. Specifically, it was predicted that high competent leaders would enjoy higher levels of endorsement compared to low competent leaders and also obtain greater compliance with their demands. Michener and Burt found no direct

relationship between leader competence (manipulated through the success/failure of the leader) and group member compliance. In addition, no relationship was found between leader competence and group member compliance when endorsement was used as a moderating variable. It should be indicated, however, that in this study the potential rewards for non-compliance seemed clearly greater than those for compliance.

Based on this review, a number of suggestions can be made concerning the steps necessary to clarify the relationship between leader competence and influence. First, the competence of the leader and the competence of the other group members need to be independently manipulated to clarify which aspects of competence are causally related to compliance. Second, the rewards for potential compliance should at least be equivalent to the rewards for noncompliance. Third, it would seem appropriate to examine influence under less ambiguous stimulus conditions than those used in earlier laboratory studies in order to examine how robust the task expertise effect is. Finally, those laboratory studies which found support for a relationship between competence and influence all involved the potential for reciprocal influence. In the two studies by Hollander, each group member gave an individual judgment and the leader or group members decided on the group judgment. In the study by Mulder and Wilke, there was a direct discussion concerning possible solutions by both group members. In the study by Mausner and Bloch each group member received the other group member's judgment before rendering a decision on the next trial. Thus, in each of the above studies there was the opportunity for mutual influence between group members. In contrast, Michener and Burt used a unidirectional and nonreciprocal leader influence attempt. It is possible that this lack of potential reciprocity created a degree of reactance in group members not present in earlier studies, which may have obscured the relationship between perceived leader competence and compliance.

The purpose of this study was to reexamine the relationship between leader competence and leader influence under conditions where the competence of the leader and group members were independently manipulated. In addition, there were two questions of related interest. First, is some form of reciprocity (mutual influence) necessary for task expertise to have an impact on group member conformity or compliance with a leader's suggestions? Second, as Hollander and Julian (1970) suggest, is leader endorsement related to group member compliance? Since Michener and Burt (1975) found no support for this hypothesis and the manipulations in the Hollander and Julian (1970) study were

difficult to interpret, it seemed appropriate to examine this question in a situation where the rewards for compliance exceed the rewards for noncompliance, and competence of the leader and group members are independently manipulated.

### Method

#### Subjects

Subjects volunteered from introductory sections of behavioral science and management and received course credit for research participation. A total of 80 males participated in this study.

#### Experimental Design

Three independent variables were manipulated. These included leader competence (high versus low), group member competence (high versus low) and the mode of leader influence (reciprocal versus nonreciprocal). This resulted in a 2 x 2 x 2 factorial design with ten observations per cell.

#### Overview of Procedures

Subjects were seated in the experimental room in groups of five. Depending on the number of naive subjects choosing that specific time, two or three of the group members were confederates of the experimenter. The same subject confederate was always chosen as leader by a bogus "random selection procedure." The remaining subject confederates were used to complete a five-person group and to enable feedback scores to be matched across groups.

Written general instructions indicated that group members would be working on two "engineering type" production tasks requiring that they build a series of models following a set of blueprints. The first model-building task (Shallow Water Carriers<sup>1</sup>) was introduced as a practice task to familiarize the group members with the skills necessary to complete the second production task (Moon Tents).

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<sup>1</sup>The Shallow Water Carrier and Moon Tent construction tasks can be found in Kolb, D. A., Rubin, I. M., and McIntyre, J. M., Organizational Psychology: An Experiential Approach (Englewood Cliffs, N.J.: Prentice-Hall), 1974.



Group members would work on the first production task individually and receive feedback about their performance.

Instructions also indicated that the second task would be completed as a nominal group, where each group member works individually, but the efforts of all group members are combined to assess performance. In addition, the leader could, if he chose, make suggestions to any or all of the group members as well as ask for suggestions from any or all of the group members to help improve performance on the second task.

Following the general instructions, the experimenter reviewed the steps involved in construction of the first model and gave the subjects additional instructions indicating that they were to build five models as fast as possible during the actual production period. Both quality and speed were equally important in determining the number of points each group member earned. Subjects were then seated in separate rooms for the first (practice) task.

#### Manipulation of Leader and Member Competence

Leader and group member competence were independently manipulated by providing bogus feedback on the practice task. Leaders and group members who received high competence feedback were told that they scored better than 108 of the 122 people who had previously completed the task with a percentile range score of 81-100. Leaders and group members who received low competence feedback scored better than only 21 of the 122 people with a percentile range score of 21-40. In each group there were two high performing group members and two low performing group members. The fifth group member (not the leader) was given a score which placed him at the 41-60 percentile, surpassing 38 of the 122 people who had previously completed the task. Thus, each group member privately received a feedback sheet which indicated how well his leader performed, how well he performed, and how well the other members of his group performed on the practice task.

#### First Questionnaire Administration

Immediately after performance feedback on the practice task, a questionnaire measuring leader endorsement, leader competence and subject competence was administered. Questions measuring endorsement were adopted from Michener and Lawler (1975). The endorsement scale items included: How satisfied are you with the performance of the group leader on the first production task? How legitimate is it for the

leader of your group to occupy his position as leader? How willing are you to have the person who served as leader head the group on the second production task? To what extent do you support or oppose the leader of your group? Other questions measured the success of the experimental manipulation of leader competence and subject competence. Questions included: How competent were you on the first production task? How competent was your leader on the first production task? Each of the questions was answered along a seven-point scale.

#### Second Production Task

Following collection of the first questionnaire, instructions for the second production task were distributed indicating that each group member could earn \$3.00 if the group's level of performance (averaged across all group members) was better than 75 percent of the groups which previously completed this task. The better each group member's performance, the better would be the performance of the group.

Additional written instructions stated that each group member would have 10 minutes to examine and learn the steps involved in building the second model. During this 10 minute period, group members would also have the opportunity to record on carbon paper their ideas and suggestions for improving performance on the second construction task. The leader would have the option of requesting copies of the group members' suggestions as well as providing copies of his own suggestions to any or all of the group members.

#### Manipulation of Mode of Influence

After 10 minutes, the experimenter and leader met with each group member individually. In the reciprocal condition, the experimenter indicated that the leader would like to give that group member a copy of his suggestions for improving performance on the second task. The leader handed the group member a carbon copy of his suggestion and said, "I hope you can read my handwriting." The experimenter followed by asking the leader if he wished to see a copy of the group member's suggestions. The leader responded by saying, "Yes, I would really like to see them." The experimenter then asked the group member to give the leader a carbon copy of his suggestions.

In the nonreciprocal condition, the dialogue was the same; however, when asked by the experimenter if he wished to see a copy of the group member's suggestion, the leader

responded, "No, I don't really need to see them." After time was allowed to inspect the leader's suggestion, the second production period began, using the same procedures followed in the practice production task.

#### Compliance with the Leader

All group members received a standardized suggestion from the leader giving his suggestions for completing the second production task. This suggestion was as follows:

Since we have to build a certain number of moon tents fast with high quality, let's do one step for all five moon tents before we do the next step, like an assembly line. An assembly line works well when speed and quality are important and you build a fixed number of things. To start let's do Step #1 for all five moon tents, first by turning each sheet of paper so that the pattern faces us, then do Step #2 for all five tents by turning the paper over so that the pattern is on the back, then do Step #3 for all five tents by folding each paper in half and so on, doing Step #4 for all five tents, then Step #5 for all five tents and so on, until we finish Step #14. I think the key is to complete one step for all five tents before doing the next step.

This leader suggestion was designed to be neither obviously helpful nor beneficial. In order to ascertain whether or not the assembly line procedure was superior or inferior to individual model production, a pilot experiment was performed in which subjects ( $n = 20$ ) were randomly assigned to complete models either individually or by assembly line. No significant differences were found in speed of production between subjects in these two conditions.

Compliance was measured by the extent to which group members followed the leader's suggestion, building the moon tents in an assembly line fashion. Trained raters viewed the construction activities through one-way glass using a coding scheme which counted the number of assembly line steps each group member used in building the five models. In order to control for the fact that some subjects may have been more inclined to use assembly line procedures on their own, all subjects were observed during the first (practice) construction task as well as the second task. A compliance score was then obtained by subtracting the first assembly line score from the second assembly line score. Potential scores could range between 0 and 140.

Four different raters assessed the extent to which group members followed the leader's suggestion to build the models like an assembly line. Interrater reliability was determined by having the four raters code the behavior of a single subject and then comparing on a percentage basis, the compliance rating scores for each pair of raters. Eighteen subjects were used in assessing interrater reliability. Average interrater reliability was 97 percent.

#### Second Questionnaire Administration

While the experimenter "scored" performance on the second production task, subjects were asked to complete a second questionnaire. This questionnaire contained questions designed to assess the effects of the reciprocity manipulation as well as filler items. Following collection of questionnaires, subjects were each paid \$3.00 and debriefed.

### Results

#### Success of Experimental Manipulations

A 2 (leader competence) by 2 (member competence) by 2 (reciprocity) analysis of variance revealed a significant main effect of leader competence,  $F(1, 72) = 80.06, p < .000$  with high competent leaders ( $\bar{X} = 5.98$ ) perceived as more competent than low competent leaders ( $\bar{X} = 3.58$ ). Leader competence was also affected by the manipulation of group member competence,  $F(1, 72) = 6.81, p < .02$ , with low competent group members perceiving their leader as more competent ( $\bar{X} = 5.12$ ) than high competent group members ( $\bar{X} = 4.43$ ). In addition, group members' perceptions of their own competence were influenced by the manipulation of group member competence,  $F(1, 72) = 13.46, p < .000$  with high competent group members perceiving themselves as more competent ( $\bar{X} = 5.25$ ) than low competent group members ( $\bar{X} = 4.28$ ). These results provide strong evidence for the successful manipulation of leader and member competence.

The mode of leader influence was also successfully manipulated. Group members in the reciprocal condition felt they had a greater opportunity to influence the manner in which the leader performed the second task ( $\bar{X} = 3.73$ ) than did group members in the nonreciprocal condition ( $\bar{X} = 2.2$ ),  $F(1, 72) = 22.95, p < .000$ . In addition, group members in the reciprocal condition felt they had greater actual influence on the leader ( $\bar{X} = 3.5$ ) than did group members in the

nonreciprocal condition ( $\bar{x} = 2.0$ ),  $F(1, 72) = 23.80$ ,  $p < .000$ .

#### Leader Endorsement

As expected, leader endorsement was affected by the manipulation of leader competence,  $F(1, 72) = 46.61$ ,  $p < .000$ , with high competent leaders more highly endorsed ( $\bar{x} = 21.72$ ) compared to low competent leaders ( $\bar{x} = 15.50$ ). In addition, there was a significant effect of group member competence on leader endorsement,  $F(1, 72) = 3.95$ ,  $p < .05$ . Low competent group members were more generous in their endorsement of their leader ( $\bar{x} = 19.33$ ) compared to high competent group members ( $\bar{x} = 17.6$ ). The fact that endorsement varied as a function of leader competence is consistent with previous literature (e.g., Michener and Lawler, 1975).

#### Compliance with the Suggestions of a Leader

An analysis of compliance with the leader's suggestion revealed a main effect of leader competence  $F(1, 72) = 12.10$ ,  $p < .001$  on compliance. Group members with high competent leaders had a higher average compliance score ( $\bar{x} = 39$ ) than those with leaders low in competence ( $\bar{x} = 20.20$ ). Similarly, group members low in competence tended to comply more with the leader's suggestions ( $\bar{x} = 40.25$ ) compared to group members who were high in competence ( $\bar{x} = 21.00$ ). In addition, there was a significant interaction effect of leader competence and group member competence on compliance,  $F(1, 72) = 6.16$ ,  $p < .02$ . This interaction is presented in Figure 1 on the following page. Inspection of the figure indicates that when the group member was low in competence, he complied more with the leader's suggestions when the leader was high ( $\bar{x} = 55.1$ ) compared to low ( $\bar{x} = 23.4$ ) in competence. However, when the group member was high in competence, his level of compliance did not differ much as a function of whether the leader was high ( $\bar{x} = 22.55$ ) or low ( $\bar{x} = 17.95$ ) in competence. Using Tukey tests, the high leader competence/low group member competence cell differed significantly from all other conditions, at minimum, at the .01 level. No other conditions, however, differed significantly from one another.

The pattern of differences between cell means suggests that both main effects of leader and group member competence on compliance with leader suggestions are attributable to the interaction effect of these variables. Specifically, in this study, it is the combination of high leader competence and low group member competence which produces a significant increment in compliance among subjects.

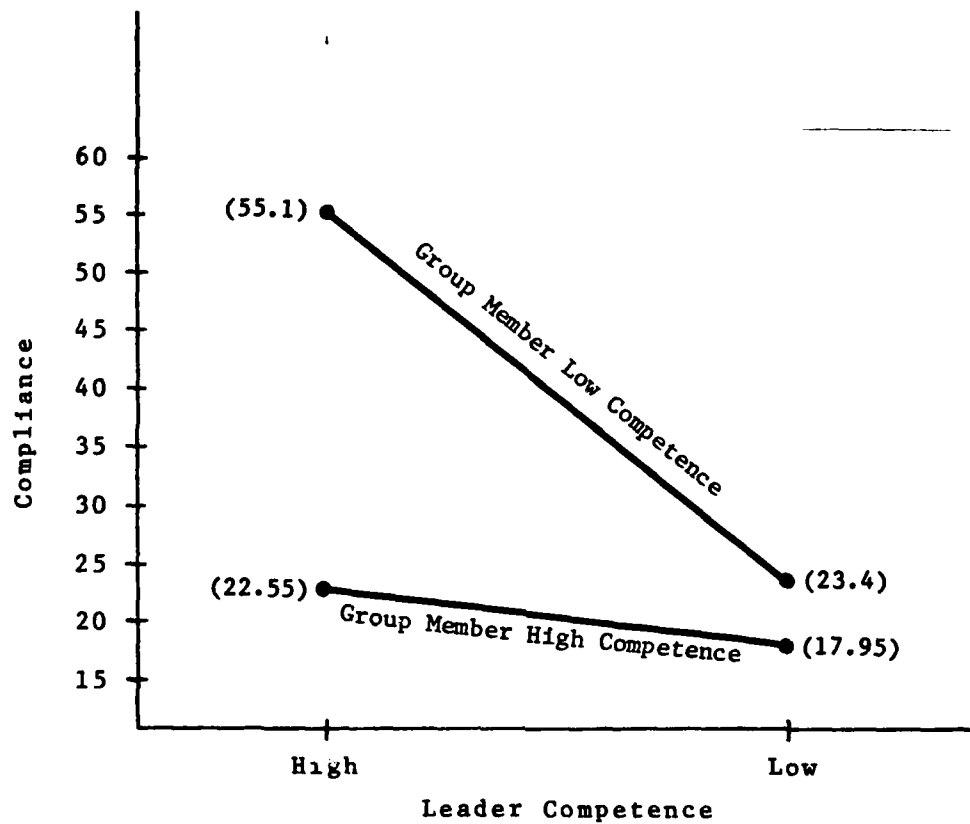


Figure 1

Leader/Group Member Competence and Compliance

No significant main effect or interactions were found for mode of leader influence (reciprocal versus nonreciprocal). It was, however, observed that many of the subjects had difficulty making suggestions which the leader might use to improve his performance. Furthermore, it appeared that there were wide differences in the quality of suggestions that subjects actually made (from no suggestion at all to some rather sophisticated schemes). This led us to speculate that subjects with high quality suggestions might appreciate sharing them with their leader in the reciprocal condition and resent the leader's lack of concern in the nonreciprocal condition, while those with low quality suggestions might react in the exact opposite manner to our manipulation of reciprocity. Based upon these observations, an internal analysis was performed. Two independent raters scored the suggestions of each group member on a seven-point scale from low to high quality. Interrater reliability was high (.88). Group members were then split at the median on suggestion quality and compliance was analyzed with a 2 (leader competence) by 2 (member competence) by 2 (mode of influence) by 2 (suggestion quality) unweighted means analysis of variance (no empty cells were produced). The results of this analysis duplicated that of the earlier analysis with significant main effects of leader competence, member competence and a significant interaction of these variables. The only additional effect was a significant mode of influence by suggestion quality interaction,  $F(1, 64) = 5.75$ ,  $p < .02$ , as presented in Figure 2 on the following page. The pattern of means in this figure is strikingly in line with our speculation. That is, among subjects with high quality suggestions reciprocity was positively related to compliance, while among subjects with low quality suggestions reciprocity was negatively related to compliance. The only significant difference between means, however, occurs in the nonreciprocal condition ( $p < .05$ , Tukey).

### Discussion

In this experiment we sought to examine some questions related to group member compliance with the task related suggestions of a leader. Although main effects of group member competence and leader competence on compliance were found, the presence of a significant interaction effect suggests that neither of these variables was sufficient alone to cause significant changes in group member compliance. Instead, from this study, it appears that only when group member competence is low and leader competence is high does one get significant increments in compliance. In such a situation the potential rewards for compliance

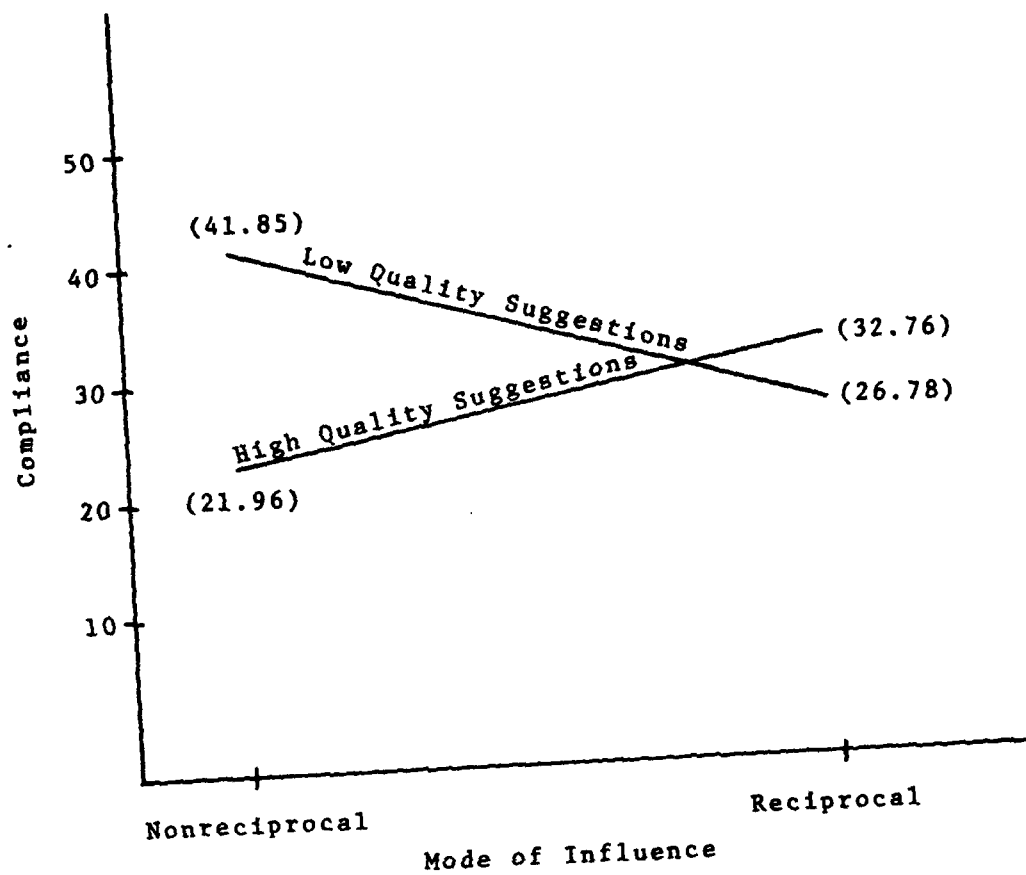


Figure 2  
Quality of Group Members' Suggestions and  
Reciprocity as They Influence Compliance



(i.e., improved individual and group performance) clearly exceed the costs of compliance (i.e., loss of independence and self-determination). Our results suggest that previous experimental research indicating a relationship between leader and/or group member task competence and compliance most probably confounded the manipulation of leader and group member competence. Furthermore, these results suggest that while highly competent leaders may exercise considerable influence with less competent subordinates, their influence over subordinates who are similarly competent may be minimal. Expert power (French and Raven, 1959) is, thus, power over inept others.

It should be pointed out that our laboratory situation is one in which leaders possessed no reward or coercive power. Furthermore, interactions were highly controlled so that referent power was not allowed to develop. Finally, the legitimate power of leaders came through direct delegation by the experimenter. While these restrictions might be viewed as detrimental to the external validity of our results, it should be noted that the position of our leaders and group members closely parallels that of many superior/subordinate relationships in large, complex organizations.

Our findings with respect to mode of influence (reciprocal versus nonreciprocal) are quite interesting. Neither a main effect of this variable nor interactions with any of the other independent variables were significant. The results of an internal analysis, however, revealed an interaction between mode of influence and the quality of group member suggestions on compliance. Group members with high quality suggestions tended to comply more under reciprocal as compared to nonreciprocal conditions. The reverse of this was true for group members with low quality suggestions. A possible explanation for these results might involve resentment on the part of group members whose high quality suggestions are ignored as well as an equal resentment on the part of group members whose low quality suggestions are solicited. These results are suggestive for participative management as a strategy for gaining commitment and compliance from subordinates in organizations. They suggest, in particular, that subordinates who lack competence or confidence in their own abilities to make suggestions, may actually resent a leader who solicits such suggestions from them. Clearly, this is an issue worthy of future investigation in both the laboratory and the field.

Finally, while leader endorsement was influenced by the manipulations of leader and group member competence, endorsement appeared unrelated to group member compliance.

The average intercell correlation between endorsement and compliance was only  $r = .16$ . This suggests that while endorsement may reflect perceived support for the leader, increased support may not necessarily yield increased compliance.

## REFERENCES

- Cartwright, D., & Zander, A. (Eds.). Group dynamics: Research and theory (3rd ed.). Evanston, Ill.: Row, Peterson, 1968.
- Emerson, R. M. Power-dependence relations: Two experiments. Sociometry, 1964, 27, 282-298.
- French, J. R. P., & Raven, B. The bases of social power. In D. Cartwright (Ed.), Studies in social power. Ann Arbor: University of Michigan, Institute for Social Research, 1959.
- Ginter, G., & Lindsfold, S. Rate of participation and expertise as factors influencing leader choice. Journal of Personality and Social Psychology, 1975, 32, 1085-1089.
- Hollander, E. P. Competence and conformity in the acceptance of influence. Journal of Abnormal and Social Psychology, 1960, 61, 365-369.
- Hollander, E. P. Leaders, groups and influence. New York: Oxford University Press, 1964.
- Hollander, E. P., & Julian, J. W. Studies in leader legitimacy, influence and innovation. In L. Berkowitz (Ed.), Advances in experimental social psychology, Vol. 5. New York: Academic Press, 1970.
- Homans, G. C. Social behavior: Its elementary forms. New York: Harcourt-Brace, 1961.
- Jaffe, C. L., & Lucas, R. L. Effects of rates of talking and correctness of decision on leader choice in small groups. Journal of Social Psychology, 1969, 79, 247-254.
- Katz, D., & Kahn, R. L. The social psychology of organizations (2nd ed.). New York: Wiley and Sons, 1978.
- Mausner, B., & Bloch, B. L. A study of the additivity of variables affecting social interaction. Journal of Abnormal Social Psychology, 1957, 54, 250-256.
- Michener, H. A., & Burt, M. R. Components of 'authority' as determinants of compliance. Journal of Personality and Social Psychology, 1975, 31, 606-614.

- Michener, H. A., & Lawler, E. J. The endorsement of formal leaders: An integrative analysis. Journal of Personality and Social Psychology, 1975, 31, 216-223.
- Mulder, M., & Wilke, H. Participation and power equalization. Organizational Behavior and Human Performance, 1970, 5, 430-448.
- Patchen, M. The locus and basis of influence on organizational decisions. Organizational Behavior and Human Performance, 1974, 11, 195-221.
- Staw, B. M. Attribution of the 'causes' of performance: A general alternative interpretation of cross-sectional research on organizations. Organizational Behavior and Human Performance, 1975, 13, 414-432.
- Student, K. R. Supervisory influence and work-group performance. Journal of Applied Psychology, 1968, 52, 188-194.
- Tannenbaum, A. S. Hierarchy in organizations. San Francisco: Jossey-Bass, 1974.
- Thibaut, J. W., & Kelley, H. H. The social psychology of groups. New York: Wiley, 1959.
- Weber, M. The theory of social and economic organization. A. M. Henderson & T. Parsons (Trans.), T. Parsons (Ed.). New York: Free Press, 1947.

## EXPERIMENT 5

### Compliance, Leader Competence, Saliency of Rewards and Type of Preceding Request

#### ABSTRACT

In laboratory groups two pilot experiments were conducted manipulating the saliency of rewards and the foot-in-the-door technique in examining compliance with a leader. Compliance with the leader's suggestions was not enhanced by either the reward manipulation or application of the "foot-in-the-door technique." Problems with the manipulations were discussed.

#### Introduction

The previous studies, conducted in the project, have suggested that the competence of the leader is unrelated to the level of group member compliance. Instead group members may comply due to a lack of perceived self-competence, irrespective of the leader's level of competence, or comply as a function of demonstrated leader competence in conjunction with their own lack of self-competence.

Given the previous difficulties in demonstrating any effects of leader competence per se on group member compliance, two additional studies were piloted to examine (1) whether leader competence is related to compliance when the rewards/costs for success/failure are more severe, and (2) whether other techniques at a leader's disposal (foot-in-the-door technique) could increase compliance with a leader's requests.

The first experiment manipulated the saliency of rewards in examining compliance with a leader's suggestions. One might expect that under conditions of high potential reward there would be a greater tendency to comply with leaders high compared to low in competence. Under conditions of low reward, no differences might be expected in compliance as a function of leader competence. Hypothesizing that different levels of rewards may interact with the competence of the leader in enhancing compliance appears consistent with exchange theory. Here, compliance by low

competent group members in the presence of a highly competent leader may occur because they perceive the rewards for compliance exceeding the costs of compliance. In these cases, being correct and earning the bonus money may outweigh the costs of following someone else's suggestion and not being able to determine how well one would do on one's own, etc. In addition, low competent group members may choose to follow a leader's suggestion, irrespective of the leader's competence, to avoid personal responsibility for the outcome. Poor performance can now be attributed to another and the costs of failure avoided.

If the costs of failure become more salient for the group and each individual in that group, then one might expect a greater willingness to abdicate the decision making responsibility to another, especially when the other is a leader of high competence. Here, collective effort towards group success may replace individual effort to see how well one could do and one could avoid personal responsibility for failure. Thus, one might speculate that under conditions of high compared to low reward, the level of leader competence may have greater influence on group member compliance.

A second question concerns other methods at a leader's disposal which may increase the level of group member compliance. In the social psychological literature one method which has received attention as a means to obtain compliance is the foot-in-the-door technique (Freeman and Fraser, 1966). This technique involves having the target first agree to a small request and then presenting a larger request which is the critical request. In the foot-in-the-door technique the first request is one which the target can "hardly refuse." While there are different explanations for this compliance without pressure technique it has proved successful in increasing compliance in a number of situations (Freeman and Fraser, 1966; Pliner, Hart, Kohl and Sarri, 1974). The second experiment involves an attempted application of the foot-in-the-door to a situation where compliance with the leader's task suggestions was of critical interest.

### Method

#### Subjects

Subjects were recruited from introductory sections of behavioral science and management and received course credit for research participation. Fifty-five male subjects participated in the first experiment dealing with the

salience of rewards and thirty-six female subjects participated in the second experiment dealing with the foot-in-the-door technique.

#### Experimental Design

Experiment I employed a 3 x 2 experimental design with three levels of leader competence (high, moderate and low) and two levels of reward (high versus low). Experiment II also employed a 3 x 2 experimental design with three levels of leader competence (high, moderate and low) and two levels of initial request (a request condition versus a no request condition).

#### Procedures

The general procedures employed in Experiment I and Experiment II were identical. Subjects were seated in the experimental room in groups of five. Depending upon the number of subjects who signed up for that particular time, either one or two group members were confederates of the experimenter. The group leader was always a confederate of the experimenter and one person played this role in each experiment. The leader was chosen through a "bogus" random selection procedure.

General instructions informed subjects that they would be working on two model building activities as members of a nominal group. The first model building activity was presented as a practice task to familiarize the group members with the skills and techniques necessary to complete the second model building task. Group members were told they would receive feedback on the practice task detailing how well they and the other group members performed. The experimenter then demonstrated the first task, Shallow Water Carrier Task, and group members were separated into different rooms to begin work on this task. Group members were asked to build five Shallow Water Carriers as fast as possible while paying attention to quality. They were informed that both speed and quality will be important in determining their performance levels.

#### Manipulation of Leader Competence

Leader competence was manipulated in both experiments by varying the performance scores of the leader while holding the performance scores of the group members constant. Through bogus feedback, leaders scored at the 81-100 percentile range, the 41-60 percentile range or 21-40 percentile range indicating high above average performance,

average performance and well below average performance, respectively. Group members were always given feedback that they scored at the 41-60 percentile range, indicating average performance. These feedback range scores had the effect of creating leaders who appeared more competent than the group members, leaders who were equal in competence to the group members and leaders who were lower in competence compared to the group members. Following competence manipulations questionnaires were distributed to measure the effectiveness of these manipulations and leader endorsement (Michener and Burt, 1975).

#### Second Production Task

After completion of the questionnaires the instructions for the second production task were distributed (Moon Tent Task). Procedures common to both experiments were as follows: Group members were given ten minutes to learn the steps involved in building the Moon Tents and told that during the actual production period they would be asked to build five models as fast as possible while paying attention to quality. In addition, the leader could play an advisory role prior to the second production period. He could circulate copies of his ideas to facilitate performance on the second task to any or all of the group members. Group members were told the leader had been studying the second task since they completed the first task and had copied his ideas on carbon paper for distribution to the group members. After the group members had the opportunity to review the steps involved in completing the Moon Tents, the leader entered each room and gave each group member a copy of his ideas to improve performance. The leader's suggestion is reprinted below:

"Since we have to build a certain number of moon tents, fast with high quality, let's do one step for all five moon tents before we do the next step, like an assembly line. An assembly line works well when speed and quality are important and you have to build a fixed number of things. To start let's do step #1 for all five moon tents first by turning the paper over so that the pattern faces us. Then do step #2 for all five moon tents by turning the paper over so that the pattern is on the back. Then do step #3 for all five tents by folding each paper in half and so on, doing step #4 for all five tents, then step #5 for all five tents until we finish step #14. I think the key is to complete one step for all five tents before doing the next step."



After group members reviewed the leader's suggestion the second production period began. After completing the five models, a second questionnaire was administered to check on the experimental manipulations. The subjects were then debriefed.

#### Measurement of Compliance

Compliance was measured in both experiments by the extent group members followed an assembly line procedure in building their models. Trained raters viewed the subjects through one-way glass using a coding scheme which counted the number of assembly line steps used. Reliability was assessed by having the raters code six practice subjects. Inter-rater reliability averaged 93 percent agreement across the five raters used in both studies.

#### Manipulation of Reward Salience, Experiment I

In Experiment I, the salience of rewards was manipulated by having half of the subjects work for a \$10.00 bonus and the remaining subjects work for \$.50 bonus on the second task. Specifically, group members were told "the experimenter will pay each of the group members a \$10.00 (or \$.50) bonus if the group's performance is 20 percent better than the average group performance on the first production task. Furthermore, each group member contributed equally to the performance of the group. No individual feedback would be given and only group performance would determine the awarding of the bonus. To increase plausibility, the experimenter handed each group member an envelope and said, "in this envelope you will find the bonus money." The money is really yours to keep if your group exceeds its prior performance by 20 percent."

#### Manipulation of Request/No Request, Experiment II

In the request condition (Experiment II) subjects were told that the group leader could communicate with the group members at her discretion, via an intercom as well as through written messages. After completion of the first construction task, the leader contacted subjects in the request condition on the intercom and said, "I found the music distracting while we were building the first sets of models. Do you mind if I ask the experimenter if he would shut the music off during the second task?" None of the subjects responded negatively to the leader's request. In the no request condition the leader announced to appropriate subjects, "I found the music distracting while we were building the first set of models. I asked the experimenter

if he would shut off the music during the second task." It should be noted that the level of reward was constant in this experiment. All subjects could earn \$3.00 if the group's performance increased by 20 percent.

### Results

#### Success of Experimental Manipulations, Salience of Reward Experiment

There was a main effect of the leader competence manipulation on perceived leader competence,  $F(2, 49) = 36.88$ ,  $p < .000$ . High competent leaders ( $\bar{x} = 5.58$ ) were perceived as more competent compared to low competent leaders ( $\bar{x} = 1.89$ ),  $p < .01$  (Tukey). While moderate competent leaders were intermediate in position ( $\bar{x} = 4.89$ ) they only differed significantly from the low competent leaders ( $p < .01$ ). Since leader competence was manipulated, one would also expect that the level of leader endorsement would vary as a function of the leader competence manipulation. This proved to be the case as the leader competence manipulation had a significant main effect on endorsement,  $F(2, 49) = 17.40$ ,  $p < .000$ . High competent leaders ( $\bar{x} = 20.79$ ) were more highly endorsed compared to low competent leaders ( $\bar{x} = 11.52$ ),  $p < .01$ . Moderately competent leaders were intermediate in position ( $\bar{x} = 17.05$ ) and significantly different at the .01 level from low competent leaders and only marginally different at the .07 level from high competent leaders (Tukey).

The leader competence manipulations had no effect, as one would expect, on perceived group member competence. There were no effects of the leader competence manipulation on group member perceptions of their own competence or on satisfaction with their own performance.

In response to questions which attempted to assess whether there were differences in motivation as a function of the rewards offered, no differences were found. Group members did not indicate any differences in "desire to earn the bonus money," in "perceived effort extended on the second task" or in "perceived effort of their teammates on the second task" as a function of the rewards offered. This is somewhat surprising as one might expect different motivational sets as a function of the amount of money that could be earned.

### Compliance with the Leader's Suggestions

There were no differences with respect to the extent group members complied with the suggestions of the leader as a function of leader competence or type of reward offered. In addition, the hypothesis suggesting that compliance would be influenced by the interaction of leader competence x type of reward, was not supported.

### Success of Experimental Manipulations, Foot-In-The-Door Experiment

The check on the experimental manipulations for the study dealing with the foot-in-the-door technique (Experiment II) closely followed that of Experiment I. There was a main effect of the leader competence manipulation on perceived leader competence,  $F(2, 30) = 32.48$ ,  $p < .000$ . High competent leaders were perceived as most competent ( $\bar{x} = 6.5$ ), followed by moderately competent leaders ( $\bar{x} = 4.7$ ) followed by low competent leaders ( $\bar{x} = 2.58$ ). All differences were significant at the .01 level, at minimum (Tukey). In addition, high competent leaders were most highly endorsed ( $\bar{x} = 23.67$ ) followed by moderately competent leaders ( $\bar{x} = 18.89$ ), followed by low competent leaders ( $\bar{x} = 14.33$ ). All differences were significant at the .05 level at minimum.

Similarly, the manipulation of leader competence had no effect on group members' perceptions of their own competence. This again suggested that the manipulation of leader competence was, in fact, independent and had ruled out any confounding effects with variations in perceived group member competence.

### Compliance with the Leader's Suggestions

Neither the manipulation of leader competence nor the request manipulation had any impact on the dependent measure of compliance. In addition, compliance was not influenced by the interaction of the leader competence x request variables.

## Discussion

### Experiment I

The failure to find any relationship between reward salience and compliance is difficult to interpret since

there are two divergent but plausible explanations. First, the lack of findings could suggest that leader competence is unrelated to group member compliance, irrespective of situational demands, such as the rewards offered for success. This finding would in fact be consistent with other research, reported in this project, suggesting that the lack of group member competence is a critical component of compliance. However, it is difficult to only argue for this type of conclusion, given the fact that questionnaire information did not clearly indicate that salience of the rewards was clearly manipulated. Group members did not indicate any greater desire to earn the larger \$10.00 bonus nor was perceived motivation greater in the \$10.00 compared to the \$.50 condition. It is possible that the differences in monetary amounts were not sufficient to engender differences in motivation or perhaps the subjects in the \$10.00 condition doubted that they would actually receive the monetary bonus. Whether or not these explanations are correct, they do reflect potential internal problems with the design. Thus we would suggest that conclusions concerning the impact of situational factors such as salience of rewards would have to await clearer tests of the hypothesis under conditions where the outcomes have a stronger motivational impact.

#### Experiment II

The lack of findings regarding the utilization of the foot-in-the-door technique are suggestive that this may not be an effective technique for inducing compliance within the type of framework studied. Clearly, there are many differences between the type of situation used in this study and other studies which found support for this procedure. One basic type of difference is that, e.g., in the Freeman and Fraser (1966) study, subjects for the critical request were asked to sign a petition or display a sign on a public service issue rather than follow advice as in the current study. It may be that the foot-in-the-door technique does not necessarily apply to type of situation under examination. It is also possible that the initial request used in this study required too little behavioral commitment from the subjects. In the Pliner, Hart, Kohl, and Sarri (1974) experiment, subjects were first asked to wear a pin which may have involved a greater commitment than simply adhering to the leader's request to allow him to ask the experimenter to turn off the music. Clearly, further experimentation may be able to specify, more clearly, other conditions when a large request preceded by a small request may increase compliance with a leader's suggestions.

#### REFERENCES

- Freeman, J. L., and Fraser, S. Compliance without pressure: The foot-in-the door technique. Journal of Personality and Social Psychology, 4, 1966, 195-202.
- Michener, H. A., and Burt, M. R. Components of authority as determinants of compliance. Journal of Personality and Social Psychology, 31, 1975, 606-614.
- Pliner, P., Hart, H., Kohl, J., and Saari, D. Compliance without pressure: Some further data on the foot-in-the-door technique. Journal of Experimental Social Psychology, 10, 1974, 17-22.

## EXPERIMENT 6

### Compliance with Leader Suggestions as a Function of Leader/Group Member Competence and Influence Mode

#### ABSTRACT

In laboratory groups, leader competence, group member competence and mode of leader influence were manipulated. Compliance with a leader's task suggestions was a function of the group member's own perceived competence and mode of leader influence. When group members were of moderate competence, leader's ideas to facilitate performance presented in the form of a demand were more successful in gaining compliance than those ideas presented with no direct influence attempt.

#### Introduction

Field studies, while rare, have suggested a positive relationship between expertise and influence. Patchen (1974) reported that expertise was the second most frequently reported characteristic of influentials. Similarly, Tannenbaum (1974) reported that expertise was rated as more important than reward, coercive or referent power in response to a question regarding supervisory influence. These studies do not, however, establish a direct link between task competence and compliance.

Laboratory studies on task competence and leadership are more numerous but there are problems in interpreting which aspects of task expertise are causally related to influence. Hollander (1960) and Hollander and Julian (1970) both used Asch type paradigms and found increased agreement with a competent group member's judgments. Similarly, a study by Mulder and Wilke (1970) found greater influence with greater amounts of task information. It is difficult to determine from these experiments whether leader competence, lack of group member competence or the interaction of both variables produced compliance effects. A recent study by Price and Garland (Note 1) used independent manipulations of leader and group member competence in order to clarify their relationship with compliance. Results indicated that

compliance was significantly increased only when leaders were high and group members were low in competence.

In the current study three levels of leader and group member competence were manipulated in order to compare the impact of relative leader versus group member differences in competence with specific absolute differences in competence as they may influence compliance.

A second question concerns the manner in which leaders attempt to influence. One might expect that leaders who attempt to influence in the form of outright demands would engender reactance (Brehm, 1966), gaining less compliance than those who use more indirect attempts at influence. On the other hand, a highly competent leader's demands of a low competent group member may be seen by both parties as quite legitimate and consistent with the social exchange relationship (Cartwright and Zander, 1968). Previous research examining compliance with leaders has ignored the manner in which influence attempts are made by leaders. The current experiment compared compliance following a direct leader influence attempt (demand condition) with compliance in a situation where no direct leader influence attempt was made (model condition).

### Method

One hundred and forty-four male volunteers from introductory sections of management courses received credit for participation in this experiment. Three independent variables were manipulated, including leader competence (high, moderate and low), group member competence (high, moderate and low) and mode of influence attempt (demand versus model). In addition, two confederates served as leaders in a 3 x 3 x 2 x 2 factorial design.

Subjects were seated in the experimental room in groups of six. Three or four members of each group were naive, depending upon the number of subjects signed up at that time. The remaining group members were confederates. The leader was always a confederate, chosen through a bogus random selection procedure. The use of six-person groups allowed feedback scores to be matched across experimental conditions. General instructions indicated that interest was in looking at the performance of nominal groups on construction tasks. Group members then received a blueprint for the first model they were to build called the Shallow Water Cargo Carrier. Building this model introduced as a practice task, involved making a series of folds on printed

paper according to a specified blueprint. After the experimenter reviewed the steps involved in building the first model, the group members were separated into different rooms for this task. They were instructed to build five models as fast as possible while concentrating on quality.

#### Manipulations of Leader and Group Member Competence

Leader and group member competence were manipulated by providing bogus performance feedback on the practice task. Members and leaders in the high competence condition were given a percentile range score of 81-100, those in the moderate competence condition received a percentile range score of 41-60 and those in the low competence condition received a percentile range score of 21-40. Feedback scores were randomly assigned in each group to the naive subjects and confederate leader. Each group member received his score and the scores of the other group members. Following performance feedback, a questionnaire was distributed to check on the effectiveness of the competence manipulations and to measure leader endorsement using a scale developed by Michener and Burt (1975).

#### Second Production Task

Following collection of the questionnaires group members were kept separate. The instructions for a second production task (Moon Tent Task) were distributed and group members were given 10 minutes to learn the steps in building this model. Instructions indicated that the leader could play an advisory role on this second task. Specifically, "the leader, at his discretion can circulate copies of his ideas for facilitating performance," to any or all of the group members. Further instructions indicated that each group member could earn \$3.00 if the group's performance, defined as the aggregated performance of individual members, was better than 75 percent of the groups that had previously completed the task. Again, both speed and quality were important to determine qualification for the bonus money.

#### Manipulation of Mode of Leader Influence

Prior to beginning the second production period, the leader met with each group member and handed him a written suggestion. The demand suggestion is as follows with the model suggestion in parentheses:

I want you to follow my idea and (My plans are to) build the 5 moon tents like an assembly line, doing one step for all 5 moon tents before doing the next step. First, make sure you (I plan to) do step #1 for all 5 tents by turning each sheet of paper so



the pattern faces you (me). Then, make sure you do (I will do) step #2 for all 5 tents by turning the paper over so that the pattern is on the back. Then do (I'll do) step #3 for all 5 moon tents and so on until you (I) finish step #14. An assembly line will work well for you (seems to work well for me) when speed and quality are important and you (I) build a fixed number of objects. So, follow my advice and complete (So, my plans are to complete) one step for all 5 tents before doing (I do) the next step.

### Measurement of Compliance

Compliance was measured by the extent group members followed an assembly line procedure in building five models during the second production period. Trained raters viewed group members through one-way glass, using a coding scheme which counted the number of assembly line steps used. Eight different raters were used in this study. Interrater reliability averaged .98 based upon a sample of nine subjects coded by all the raters.

Following completion of the moon tent task, a second questionnaire was administered to assess the success of the mode of influence manipulation.

### Results

#### Success of Experimental Manipulations

There was a significant main effect of leader competence,  $F(2, 108) = 81.74$ ,  $p < .000$ , with high competent leaders ( $\bar{X} = 5.98$ ) perceived as most competent, followed by moderately competent leaders ( $\bar{X} = 4.81$ ), followed by low competent leaders ( $\bar{X} = 3.04$ ). All differences were significant at the .01 level (Tukey). There was also a group member competence x mode of influence x leader interaction on perceived leader competence,  $F(2, 108) = 6.10$ ,  $p < .01$ . This interaction is unexplainable since mode of influence was manipulated after leader competence was measured.

There was a significant main effect of group member competence on subjects' perceptions of their own competence,  $F(2, 108) = 136.74$ ,  $p < .000$  with highly competent group members ( $\bar{X} = 5.70$ ) most positive in evaluating their own performance, followed by moderately competent group members ( $\bar{X} = 4.66$ ) followed by low competent group members ( $\bar{X} = 3.77$ ). All differences were significant at the .01 level (Tukey). There was also a leader competence x mode of influence x leader interaction,  $F(2, 108) = 4.27$ ,  $p < .02$ ,

on perceived group member competence, which cannot be explained since mode of influence was manipulated after subjects evaluated their own performance.

Finally, in response to the question assessing the strength of the leader's attempt to influence, there was, as expected, a significant main effect of mode of influence,  $F(1, 108) = 43.02$ ,  $p < .001$  with subjects in the demand condition reporting that leaders tried harder to influence them than subjects in the model condition.

#### Compliance with Leader Suggestion

Compliance was measured by subtracting the number of assembly line steps each subject used in completing the first task from the number used in completing the second task. This controlled for any predisposition on the part of a group member to use an assembly line procedure prior to the leader suggestion.

There was significant main effects of group member competence,  $F(2, 108) = 7.26$ ,  $p < .001$  and mode of influence,  $F(1, 108) = 4.74$ ,  $p < .04$ , on compliance. Both moderately competent ( $\bar{x} = 74$ ) and low competent ( $\bar{x} = 79.9$ ) group members complied more than high competent group members ( $\bar{x} = 57$ ) at the .03 and .01 levels respectively (Tukey). In addition, compliance was significantly greater overall in the demand ( $\bar{x} = 75.4$ ) as compared to model condition ( $\bar{x} = 64.5$ ). Also, a marginally significant second order interaction between subject competence and mode of influence,  $F(2, 108) = 3.02$ ,  $p < .053$ , revealed that leader demands produced more compliance than modelling ( $p < .05$ , Tukey) only when group members were of moderate competence. In the high and low competence conditions, mode of influence had no effect on compliance. This interaction is presented in Figure 1 on the following page.

#### Discussion

The results of this study suggest that compliance with a leader's task suggestions was a function of the group member's own perceived level of competence and unrelated to the level of leader competence. Although we did find that the leader competence manipulation influenced leader endorsement,  $F(2, 108) = 61.92$ ,  $p < .000$ , it appears that endorsement was unrelated to compliance as has been suggested by Michener and Burt (1975). Furthermore, this study did not suggest that relative differences in leader and group member competence are critical for compliance effects.

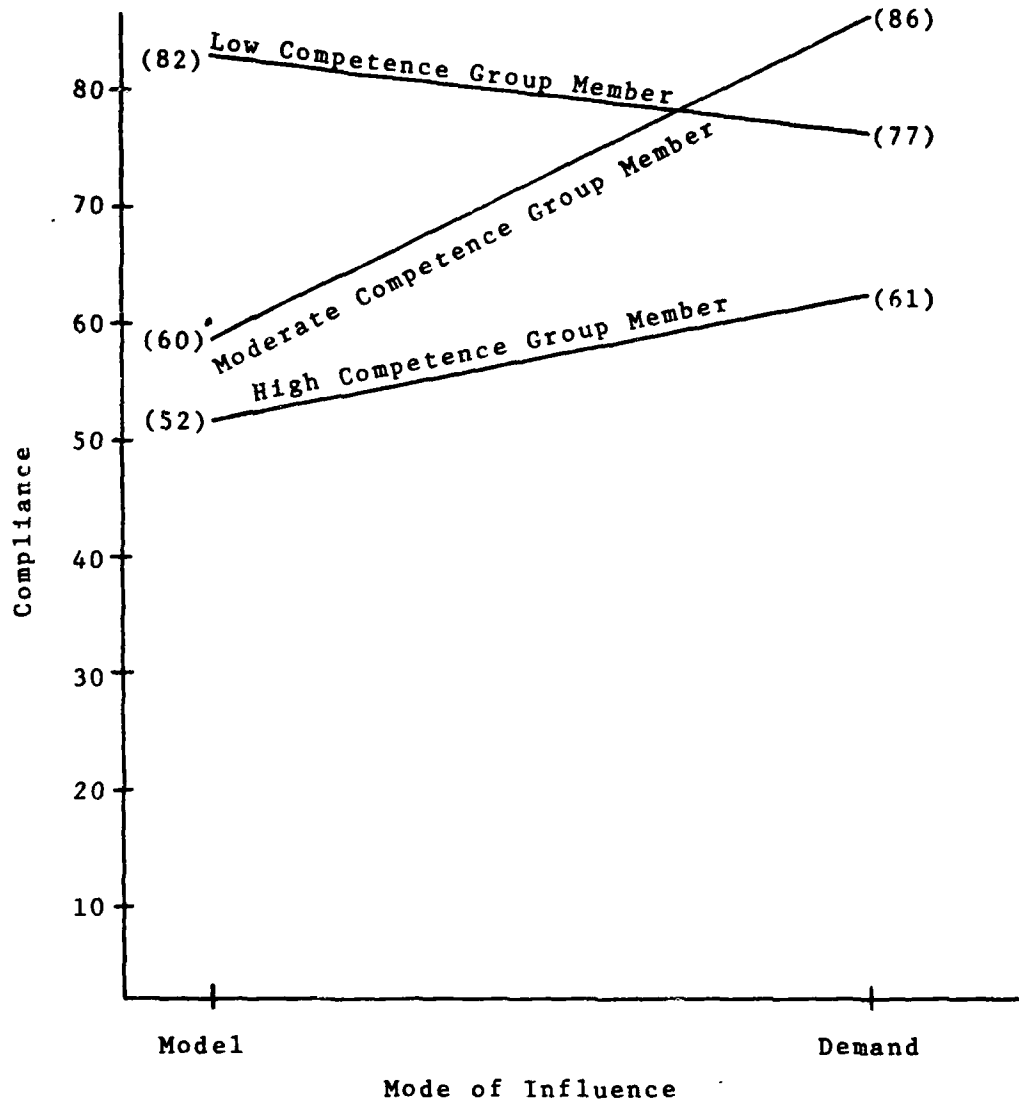


Figure 1  
Compliance As A Function of Group Member  
Competence and Mode of Influence

Based upon the differences observed in this study, it seems that the lack of group member competence can influence the degree of compliance, irrespective of the leader's level of competence. This finding differs from the results of a previous study, which suggested that both high leader competence and low group member competence were necessary for compliance (Note 1). The results of these two studies, suggest as a whole, that group members may comply with the task suggestions of a leader as a function of their own level of competence, irrespective of the leader's competence, or may comply with a leader as a function of high leader and low group member competence. While it is unclear at this time, what differences in stimulus conditions may be related to each effect, both studies are consistent in indicating that leader competence, alone, is unrelated to group member compliance.

With respect to the manner in which a leader's suggestion is presented, our results indicate that demands from leaders do not necessarily produce increased reactance and decreased compliance. Contrary to this, demands were particularly effective as compared with modelling when group members were of moderate competence. Perhaps, high competent group members are unlikely to comply, regardless of the method of influence used, while low competent group members may be receptive to any type of influence attempt that may improve their performance. On the other hand, group members of moderate competence may be in a more ambiguous situation. The group member may be uncertain that the leader's approach to the task will improve his own performance in the model condition and he may choose to use his own approach, avoiding the costs of complying (i.e., following someone else's ideas). Since the group member's performance may not be quite good enough, however, a demand from the leader that his suggestion be followed could add a degree of certainty (i.e., good performance will follow) and/or alleviate the group member's responsibility for future performance which may be mediocre, at best. Unfortunately, we do not have any data on the reasons that group members complied, although this would certainly be a useful area for further research.

#### REFERENCE NOTE

1. Price, K. H., & Garland, H. Experiment 4: Compliance with a leader's suggestions as a function of leader/member competence and reciprocity. Unpublished manuscript, University of Texas at Arlington, 1979.

#### REFERENCES

- Brehm, J. W. A theory of psychological reactance. New York: Academic Press, 1966.
- Cartwright, D., & Zander, A. (Eds.). Group dynamics: Research and theory (3rd ed.). Evanston, Ill.: Row, Peterson, 1968.
- Hollander, E. P. Competence and conformity in the acceptance of influence. Journal of Abnormal and Social Psychology, 1960, 61, 365-369.
- Hollander, E. P., & Julian, J. W. Studies in leader legitimacy, influence and innovation. In L. Berkowitz (Ed.), Advances in experimental social psychology, 5. New York: Academic Press, 1970.
- Michener, A., & Burt, M. R. The components of authority as determinants of compliance. Journal of Personality and Social Psychology, 1975, 31, 606-614.
- Mulder, M., & Wilke, H. Participation and power equalization. Organizational Behavior and Human Performance, 1970, 5, 430-448.
- Patchen, M. The locus and basis of influence on organizational decisions. Organizational Behavior and Human Performance, 1974, 11, 195-221.
- Tannenbaum, A. S. Hierarchy in organizations. San Francisco: Jossey-Bass, 1974.

## EXPERIMENT 7

### Group Member Compliance As A Function of Group Member Competence, Leader Monitoring Behavior and Interaction Anticipation

#### ABSTRACT

In laboratory groups the competence of the group members, the monitoring behavior of the leader and future interaction with the leader were manipulated. Results indicated that group members tended to comply with the leader's task suggestions as a function of their own lack of competence. Anticipating future interaction with the leader did not consistently influence compliance across the two leaders used in this study.

#### Introduction

A leader's influence has been theoretically related to his level of task expertise. For example, Hollander (1961) suggests that leaders who possess high compared to low levels of task competence are able to exert greater task influence upon their co-workers' task behavior. The relationship between task expertise and influence has received attention in both the leadership and small group (conformity) literature. However, inspection of the literature makes it difficult to assess the manner in which expertise is related to influence.

Studies by Hollander (1960) and Hollander and Julian (1970) both used Asch type paradigms in examining the relationship between task expertise and influence. Both studies reported increased agreement with the competent group member's judgments. In the former study, the competence of the critical group member was manipulated by feedback that he gave the correct answer and the remaining group members gave the incorrect answer over a series of 15 trials. In the latter study, the competence of the group leader was held constant and the competence of the group members was manipulated above and below the leader. Problems in interpreting these manipulations makes it difficult to determine which aspects of competence were producing the effect. In

the Hollander (1960) study, it is possible that increased influence may have been a result of the greater competence of the influential group member, the relative lack of competence of the conforming group members or the interaction of both variables. In the Hollander and Julian (1970) study, it appears that the group members' own self-confidence was manipulated, suggesting a relationship between group member self-confidence and conformity rather than a relationship, as the authors indicate, between leader competence and group member conformity.

A recent study by Price and Garland (Note 1) attempted to specify which aspects of task competence were causally related to compliance by independently manipulating leader and group member competence in a 3 x 3 x 2 design. There were three levels of leader competence (high versus moderate versus low), three levels of group member competence (high versus moderate versus low) and two types of leader suggestion (leader either modelled his suggestion or presented his task suggestion in the form of a demand to the group members). The major dependent variable was the extent that group members followed the suggestion of a leader. The results of this study suggested that group members complied as a function of their own level of competence, as there was a significant main effect of group member competence on compliance. Both the moderately competent group members and low competent group members complied more with the leader's suggestion than the high competent group members. Based on these findings the current study sought to reexamine compliance with a leader as a function of extreme differences in group member competence while also examining the impact of two other variables on compliance.

Specifically, it was predicted that low competent group members compared to high competent group members would comply more with the problem solving suggestions of a leader. In addition, this study was interested in assessing the effects of leader monitoring behavior and anticipating future interaction with the leader on compliance. The majority of studies which examined compliance have examined public compliance (e.g., the leader was immediately aware of whether or not his suggestions were followed). Thus, it would be of interest to vary the monitoring behavior of the leader along a public/private dimension and examine its impact on compliance. However, one might not expect that the monitoring behavior of the leader would have a strong effect on compliance, except in situations where the group members expected to interact with the leader on other occasions. Thus, a second variable of interest would be whether or not the group members anticipate future

interaction with the leader. Here it is suggested that the monitoring behavior of the leader, when the group member expects to interact with the leader, would increase the level of group member compliance. One might not expect any affect on compliance of leader monitoring behavior, when future interaction with the leader is not anticipated.

### Method

#### Subjects

Subjects volunteered from introductory sections of behavioral science and management courses and received credit for research participation. A total of 69 females participated in this study.

Three independent variables were manipulated. These included group member competence (high versus low), the monitoring behavior of the leader (observation versus no observation), and interaction anticipation (whether or not the group member anticipated future interaction with the leader). In addition, two confederates were used as leaders forming a  $2 \times 2 \times 2 \times 2$  factorial design. An attempt was made to counterbalance leaders across conditions. This was partially successful. In half of the cells the number of observations based on each confederate was equivalent. In only one of the remaining cells did the number of observations recorded for each leader differ by more than one.

#### Overview of Procedures

Subjects were seated in the experimental room in groups of six. Depending on the number of naive subjects choosing the time, two or three of the group members were confederates of the experimenter. One of two confederates was always chosen as leader by a "random selection procedure." The remaining subject confederates were used to complete a six-person group and to enable feedback scores to be matched across groups.

Upon seating, copies of the general instructions were distributed indicating that on the first task group members would be asked to build a series of models following a set of blueprints. The first model building task (Shallow Water Carriers) was introduced to familiarize the group members with the type of skills necessary to complete projects they would receive later in the experiment. Group members would work on the first task individually and would receive



feedback about their performance and the performance of the other members of their group.

Following these instructions, the experimenter reviewed the steps involved in the construction of the first model and told group members they were to build five models as fast as possible, during the actual construction period. In evaluating performance, both quality and speed would be equally important.

#### Manipulation of Subject Competence

Subject competence was manipulated by providing bogus feedback on the practice task. Group members in the high competence condition were told they scored in the high above average category with a percentile range score of 81-100, indicating that they did better than 108 of the 122 people who had previously completed this task. Group members in the low competence condition were told they fell in the below average category with a percentile range score of 21-40, indicating they surpassed 12 of the 122 people who had previously completed this task. All group members, regardless of their competence, were told the leader fell within the high above average category, with corresponding percentile range scores. Remaining scores of group members were equally divided at each feedback level so that in each group there were two high above average scores, two average scores and two below average scores.

#### First Questionnaire Administration

Immediately after performance feedback on the practice task, a group reaction questionnaire was administered checking the success of the experimental manipulations, and containing filler items which were not analyzed. Each of the questions was answered along a seven-point scale.

#### Second Production Task

Following collection of questionnaires, the instructions for the second production task were distributed (Moon Tent Task). The instructions indicated that group members would have 5 minutes to learn the steps involved in construction of the moon tents. The leader of the group had already studied the blueprint and built one model while the group members were completing the group reaction questionnaire. Since the group members would be working as members of a nominal group on the second task, the leader would play an important advisory role. While the group members were studying the procedures for the second production problem,

the leader would be using this time to record on carbon paper any suggestions she might have for facilitating performance on the second production task. After the group members finished studying the second task, the leader could at her discretion, circulate copies of her suggestions to any or all of the group members.

Further instruction indicated that each group member could earn \$3.00 if the group's performance was better than 75 percent of the groups which had previously completed this task. The better each group member performed, the better would be the performance of the group. During the second production period, each group member would be asked to build five models as rapidly as possible while paying attention to quality. Both factors would be equally important in determining the number of points each group member contributed towards the total points earned by the group. No individual feedback would be given and only group performance would determine awarding of the bonus on the second task.

#### Manipulation of Anticipation of Future Interaction

In the anticipate future interaction condition, the last section of the Moon Tent instructions indicated that after the group members received performance feedback on the Moon Tent task, they would work on a third task; there was no mention of a third task in the no-anticipate future interaction condition. If the group members anticipated future interaction, they were told they would meet with the leader and other group members to discuss procedures for completing the "Hollow Square Construction Task."

#### Compliance with the Leader

After the group members read the instructions for the second task, the experimenter and the leader met with each group member individually. The experimenter indicated that the leader would like to give each group member a copy of his suggestions for improving performance on the second task. The leader handed each group member a carbon copy of his suggestion and said, "I hope you can read my handwriting." All group members received a standardized suggestion from the leader which was as follows:

"Since we have to build a certain number of moon tents fast with high quality, let's do one step for all five moon tents before we do the next step, like an assembly line. An assembly line works well when speed and quality are important and you build a fixed number of things. To start let's do Step #1 for all five moon

tents, first by turning each sheet of paper so that the pattern faces us, then do Step #2 for all five tents by turning each sheet of paper so that the pattern is on the back, then do Step #3 for all five tents by folding each paper in half and so on doing Step #4 for all 5 tents, then Step #5 for all five tents and so on until we finish Step #14. I think the key is to complete one step for all five tents before doing the next step."

#### Manipulation of Leader Monitoring Behavior

After the group members had time to read the leader's suggestion, the experimenter returned to each group member's room with the construction materials for the second production task and reviewed the task instructions. Following the instructions, in the non-monitoring condition, the leader left the room, and the second production period began. In the monitoring condition, prior to beginning the second production period, the experimenter added the following:

"I've asked the leader to observe your construction activities through the one-way glass. I've asked her to do this so that she can complete some questionnaire information about how you build the moon tents."

As the experimenter said this, he rolled up the blinds to expose the one-way glass.

#### Measurement of Compliance

Compliance was measured by the extent to which group members followed the leader's suggestion, building the moon tents in an assembly line fashion. Trained raters viewed the construction activities through one-way glass using a coding scheme which counted the number of assembly line steps each group member used in building the five models.

Six different raters assessed the extent that group members followed the leader's suggestion to build the models like an assembly line. Interrater reliability was determined by having the six raters code the behavior of a single subject and then comparing on a percentage basis, the compliance rating scores for each pair of raters. Nine subjects were used in assessing interrater reliability. Average interrater reliability was 98 percent.

#### Second Questionnaire Administration

While the experimenter "scored" performance on the second production task, subjects were asked to complete a

second questionnaire. This questionnaire contained questions designed to assess the success of the manipulations of interaction anticipation, monitoring behavior of the leader, as well as containing filler items. Following collection of questionnaires, subjects were debriefed.

## Results

### Success of Experimental Manipulations

Analysis revealed a significant effect for the manipulation of group member competence,  $F(1, 53) = 26.10$ ,  $p < .000$ , with high competent group members perceiving themselves as more competent ( $\bar{X} = 5.67$ ) compared to low competent group members ( $\bar{X} = 3.94$ ). In addition, group member perceptions of their own competence were unexpectedly affected by the triple interaction of monitoring behavior x interaction anticipation x leader,  $F(1, 53) = 4.70$ ,  $p < .04$ , and by a second order interaction of monitoring behavior x leader,  $F(1, 53) = 4.07$ ,  $p < .05$ . Both of these interactions are difficult to explain since the manipulation of the leader's monitoring behavior and the variable of interaction anticipation were manipulated after the questions measuring group member competence were administered.

As expected, a question assessing leader competence was unaffected by the group member competence manipulation. Low competent group members did not perceive the leader as more competent compared to the high competent group members. In addition, group members in the monitoring condition felt the leader was more likely to observe their construction activities ( $\bar{X} = 5.65$ ) compared to subjects in the non-monitoring condition ( $\bar{X} = 1.80$ ),  $F(1, 53) = 151.13$ ,  $p < .000$ . Finally, subjects in the anticipate future interaction condition felt they would more likely work with the leader and group members on another task ( $\bar{X} = 5.16$ ) compared to group members who did not anticipate future interaction ( $\bar{X} = 3.96$ ),  $F(1, 53) = 9.43$ ,  $p < .003$ . Thus, as a whole, the experimental manipulations were considered successful.

### Compliance with the Suggestions of the Leader

Compliance was measured by the extent group members followed the assembly line suggestions of the leader in completing the second production task. In computing compliance scores, the number of assembly line steps used in completing the Shallow Water Carriers was subtracted from the number of assembly line steps used in completing the

Moon Tents. This controlled for a predisposition on the part of the group members to use an assembly procedure in building the models. There were two measures of compliance. The first measure, initial compliance, measured the extent group members followed the leader's suggestion in completing the first three steps of the Moon Tent task. The second measure of compliance, total compliance, reflected the extent the group members followed the leader's suggestion across all 14 steps of the model building activity.

As predicted, there was a main effect of group member competence,  $F(1, 53) = 4.33$ ,  $p < .05$  on initial compliance. Group members low in competence complied more with the leader's suggestion ( $\bar{X} = 30.38$ ) compared to group members in the high competence condition ( $\bar{X} = 24.68$ ).

On the measure of total compliance there was also a main effect of group member competence on compliance,  $F(1, 53) = 7.06$ ,  $p < .01$ , with low competent subjects complying more with the leader's suggestion ( $\bar{X} = 55.52$ ) compared to high competent subjects ( $\bar{X} = 41.20$ ). In addition, there was a second order interaction of interaction anticipation x leader on compliance,  $F(1, 53) = 6.40$ ,  $p < .02$ . This interaction is presented in Figure 1 on the following page. Inspection of this figure indicates that the interaction anticipation variable did not have the same effect for both leaders. When the group members anticipated future interaction with Leader I there was higher compliance than when group members anticipated future interaction with Leader II,  $p < .05$  (Tukey). When the group members did not anticipate future interaction with the leader, there was no difference in compliance as a function of the group leader.

### Discussion

The results of this study indicate that the competence of the group member is an important variable in determining compliance. Based on these results, one might suggest that high competence on the part of the leader is not sufficient by itself to elicit compliance. Rather low group member competence (e.g., Price and Garland, Note 1) is a necessary condition for compliance to occur. One might infer, in this study, that given the desire to be correct and obtain the bonus money, the suggestions of the high competent leader was attractive to the low competent group member. It offered one potential method to increase performance.

It should be noted that compliance was obtained in this study in a non-ambiguous task situation where there was

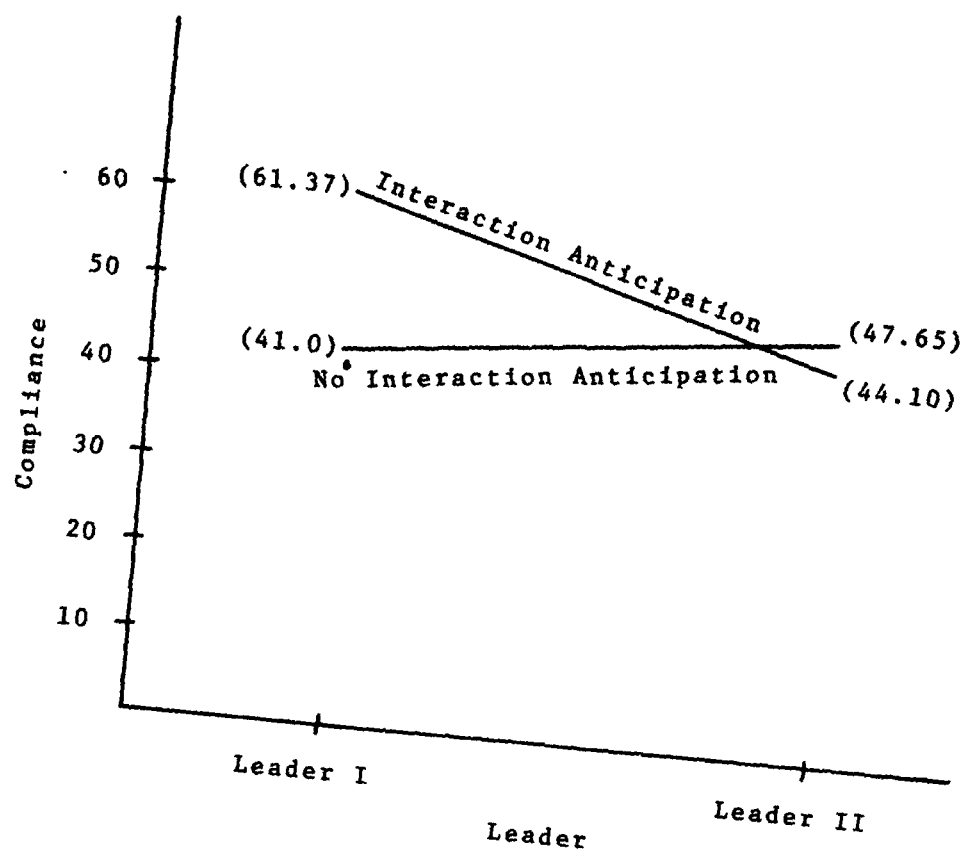


Figure 1  
Compliance As A Function of Anticipating  
Interaction with the Group Leader

self-generated feedback to the group members concerning their performance. In addition, in contrast to other studies of conformity (e.g., Hollander and Julian, 1970) the leader made a direct suggestion to the group members rather than have each group member indicate, serially, his preference for a specific solution. This extends the findings regarding compliance and the importance of the group member competence to situations where reciprocity between leader and group members is not implicit in the problem solving situation (e.g., Hollander, 1961; Mausner, 1954).

In examining the likelihood of other variables in increasing compliance, the results were unclear. The predicted interaction between monitoring behavior x interaction anticipation was not supported. However, compliance was affected by the interaction anticipation variable, although this was not consistent across leaders. Why group members anticipating interaction with one leader tended to comply more than with the other leader is unclear. At this point, it may be only suggested that perhaps the styles of the leaders were quite different. Although the group members only interacted very briefly with the leader, individuals familiar with both leaders have suggested that the group members may have picked up a more punitive style on the part of the leader obtaining higher compliance levels. This leader may have appeared more ready to sanction or at least question the group members, when they met again, concerning the extent they followed the leader's suggestion on the second problem solving task. Thus, it might be useful for future research to examine the relationship of individual difference variables (e.g., leadership styles) and its effects on compliance in conjunction with variables such as interaction anticipation.

#### REFERENCE NOTE

1. Price, K. H., & Garland, H. Experiment 6: Group member compliance with a leader's suggestions as a function of leader/member competence and influence mode. Unpublished manuscript, University of Texas at Arlington, 1979.

#### REFERENCES

- Hollander, E. P. Competence and conformity in the acceptance of influence. Journal of Abnormal and Social Psychology, 1960, 61, 365-369.
- Hollander, E. P. Emergent leadership and social influence. In L. Petrullo & B. M. Bass (Eds.), Leadership and interpersonal behavior. New York: Holt, Rinehart and Winston, 1961.
- Hollander, E. P., & Julian, J. W. Studies in leader legitimacy, influence and innovation. In L. Berkowitz (Ed.), Advances in experimental social psychology, 5. New York: Academic Press, 1970.
- Mausner, B. The effect of one partner's success in a relevant task on the interaction of observer pairs. Journal of Abnormal and Social Psychology, 1954, 49, 557-560.



## EXPERIMENT 8

### Leader Allocations As A Function of Task Expectations, Salary Contingencies and Locus of Control and Group Member Reactions to Two Allocation Strategies

#### ABSTRACT

In laboratory groups leader allocations were examined in a 2 (leaders expected to work cooperatively or independently with the group members) x 2 (leader's salary was contingent or non-contingent on group member performance) x 2 (leaders were high or low in personal control) design. Group member reactions were examined in a 2 (high versus low performer) x 2 (group member salary based on equity or equality) x 2 (leader's pay contingent or non-contingent on group member performance) design. Results suggested that an individual difference variable (locus of control) influenced the leader's allocation strategy but group member performance was unaffected by any of the manipulated variables.

#### Introduction

One source of a leader's potential influence over the members of his group is reward power (French and Raven, 1968) or the ability to allocate valuable resources among the group members. The study of leader influence, therefore, would not be complete without an understanding of the factors which affect leader allocation of resources as well as the effect of resource allocation on group performance. While there are a number of theories to be found in organizational/social psychology which deal with resource allocation, none has received as much recent theoretical and empirical treatment as equity theory (Adams, 1963, 1965). The basic assumption of equity theory as applied to resource allocation is that distributions of outcomes (rewards) which are proportional to inputs (effort, performance, etc.) will be perceived as fair or equitable, while all other distributions will be perceived as unfair or inequitable. The theory goes on to postulate that perceived inequity creates tension which may have implications for recipient performance as well as the allocator-recipient relationship.

In recent years, the literature on equity theory has shifted from research that attempted to investigate the way in which individuals react in response to inequitable distributions of rewards (Adams, 1963) to research that attempts to investigate variables which affect the allocation process itself. Much of this allocation research has involved direct dyadic exchanges in which the allocator is also a recipient of the allocation. The more common situation in formal organizations, however, is one in which a third or outside party allocates rewards to other parties but is not him/herself a recipient of these allocations (e.g., a supervisor recommends merit increases for subordinates but normally does not make these recommendations for him/herself).

Existing research on third party allocation has indicated that a variety of strategies exist for the allocation of resources among members of groups (Garland and Judd, 1978). Deutsch (1975) has argued that allocators may vary the strategies they use as a function of the social setting they are in. Specifically, economic settings are expected to produce allocations based upon the equity principle; social settings are expected to produce allocations based upon the equality principle, and settings which foster development produce allocations based upon need. Leventhal (1976) has argued that allocation norms have instrumental value for the allocator. So, for example, an allocator who wishes to minimize conflict and maximize group harmony might be expected to violate equity and move toward equality in the distribution of resources.

Recent studies have shown that an allocator's goals (Greenberg and Leventhal, 1976) and personality (Greenberg, 1979), as well as the characteristics of those to whom the allocation will be made (Greenberg, 1978) all may have an affect upon the strategy adopted. A consistent problem with these third party allocation studies is that they all involve an experimental role-play methodology. Subjects are asked to imagine that they are supervisors whose job it is to allocate rewards to hypothetical work group members. While these role-play studies do offer data on what individuals say they would allocate to various group members, we cannot be sure that allocators faced with a real group situation would not deviate from the allocation strategies uncovered in this body of research. For example, Greenberg and Leventhal (1976) found that subjects asked to allocate rewards in order to motivate high performance frequently resorted to overreward of low performing group members. While this effect is quite interesting, one may ask whether

or not leaders facing real groups with which they are forced to interact would be so willing to violate the equity norm.

The experiment which follows sought to investigate several questions related to the factors which influence leader allocation of rewards following group member performance as well as factors which influence group member reactions to leader allocations.

With respect to leader allocations two independent variables were of interest. First, we wished to compare leader allocations in a situation where the leader's own future rewards (i.e., following his allocation) are dependent on group performance with allocations in a situation where the leader's future rewards are independent of the group's performance. Following the work of Greenberg and Leventhal (1976) it was expected that leaders whose outcomes depended upon group performance might be more willing to violate equity in order to motivate higher performance than leaders whose outcomes were independent of group performance. Second, we wished to compare the allocations of leaders who expected to work cooperatively on a later group task with leaders who were expected to work independently on a later task with members of their group. Since both Deutsch (1975) and Leventhal (1976) have argued that equality of reward allocations can often serve to build group harmony and cooperation, it was expected that leaders would violate equity in the direction of equality more often when their groups were expected to work cooperatively than when they were expected to work independently.

Finally, we sought to look at the relationship between leader personality and reward allocation. Greenberg (1979) has demonstrated that individuals who endorse the Protestant Ethic are less likely to violate equity in reward distributions than those who do not endorse this ethic. In this research we looked at locus of control (Levinson, 1973) as a leader personality variable. It was expected that leaders who believe in a high level of personal control over outcomes would be less likely to violate equity in their reward allocation than those who believe in a low level of personal control over outcomes.

With respect to group member reactions following leader allocation, we were guided by some of Adams' (1963) original hypotheses. Proportional allocations based upon the norm of equity were expected to result in favorable perceptions of the group leader and stable performance following reward allocations. Equal distribution of rewards were expected to produce feelings of underpayment in the high producing group

members and feelings of overpayment in low producing group members. As predicted by Adams, underpaid subjects were expected to decline with respect to the quantity of their output, while overpaid subjects were expected to increase their output. Additionally, it was expected that perceptions of the leader following equal distributions of reward would be less favorable, especially for high producing group members. Whether or not the leader's own outcomes were dependent upon the group's performance was also of interest as a factor which might potentially relate to group reactions following leader allocations. It was expected that performance effects would be magnified in the situation where the leader's rewards were tied to group performance, since by manipulating their own performance in this situation, group members could not only restore equity for themselves but also exert direct influence on their leaders outcomes.

### Method

#### Subjects

Subjects were recruited from introductory sections of behavioral science and management courses and received course credit for participation in research.

#### Experimental Designs

A 2 (leader salary) x 2 (leader task expectations) design was used in examining leader allocations. The leader salary was manipulated by paying the leader a fixed rate, irrespective of the group members performance, or by making the leader's salary contingent upon the performance of his group. Task expectations was manipulated by having the leader expect to work with both group members, collaboratively, on a second task or having the leader expect to work with each group member independently on the second task. Thirty-two male subjects participated in this experiment.

In examining group member reactions to leader allocations a 2 (group member performance) x 2 (group member pay) x 2 (leader salary) design was used. Group member performance was manipulated through "bogus" feedback. Group members were told they were to enter the high or low performing member of the group. Group member pay was varied by paying the group member based on a rule of equity or equality and leader salary was manipulated by paying the leader at a fixed rate, irrespective of the group's performance, or a rate contingent upon the performance of

the group. Sixty-five males participated in this experiment.

#### Overview of Procedures

Subjects were seated in groups of three in the experimental room and the experimenter distributed copies of the general instructions. Group's members were told they would be working on two construction activities where they would be asked to build paper models following a set of blueprints. Group members would be given the first set of blueprints in a few minutes with some practice models and would be asked to learn and discuss the steps as a group. Following the group discussion, group members would be separated into different rooms and asked to build as many models as possible in a 10 minute period. The experimenter stated that the group members could earn bonus points, depending upon the number of acceptable quality models built, which could be directly converted into money. At the end of the first task, the experimenter would give each group member feedback about their group's earnings as well as each group member's contributions to the total group earnings.

In addition, the experimenter explained that the group members would work as members of a nominal group, which necessitated the selection of a leader. While the leader's responsibilities would be outlined in more detail later, initially, he would be responsible for insuring that each member of the group understood the steps involved in constructing the first model.

Group members were then handed the blueprint for the first production task and two practice models. They were given 10 minutes to learn the steps involved in building the model and to select a leader.

At the end of the 10 minutes the experimenter reentered the room, asked for the name of the leader and then separated each of the group members into different rooms. At this point, the instructions to the leader and the group members were administered separately.

#### Group Member Instructions Prior to the First Construction Task

After the group members were individually seated, they were handed written instructions indicating in a few minutes they would receive a "work basket." Each work basket would contain enough paper, when properly folded, to build a

number of models. When they were given the signal to begin, they should try to earn as many bonus points as possible by building as many acceptable, quality models as they could, in the 10 minute production period.

Group members were also informed that the leader would play an advisory role on the first production task. While the group members would be completing the first task, the leader would be choosing the second group task. The leader would be examining three different construction activities and be asked to choose one, which the group members would complete later in the experiment.

In addition, group member instructions stated that each bonus point would be worth one cent. In the past, group earnings on the first task have ranged from \$.56 to \$3.64 which was divided by the leader between the group members. At the end of the first task, the leader and the group members would receive feedback about the group's total earnings, and each group member's contribution to the group's earnings. After receiving this information the leader would allocate the group's earnings between the two group members. After receiving these instructions, the group members began on the 10 minute construction period.

#### Leader Instruction Prior to the First Construction Period

While the group members were reading their instructions about their and the leader's role, the leader also received a set of general instructions outlining his role and the role of the group members. Leaders were also told they would not be building models during the 10 minute construction period, but would play an advisory type role. In this role, they would receive feedback about their group members' performance on the first task, including each individual's contributions to the group's earnings. Based on the number of bonus points earned by the group, they would be asked to allocate the group's earnings between the members of the group.

In addition, leaders compared to group members were given additional but different information about the nature of their advisory role. While the group members were building the first set of models, the leader would be asked to work on the second group task; one that the group members would complete later in the experiment. Leaders were asked to review the steps involved in completing the second task so that they could eventually teach the group members the procedures to use during a brief training session. They

were also asked to think of ways to facilitate group performance during the second construction period. Further specification of the conditions under which the second task was to be performed constituted manipulation of the independent variables in the leader allocation design and are discussed below.

#### Manipulation of Group Versus Individual Problem Solving, Leader Allocation Design

Half of the leaders were told the members of their group would be working more collaboratively on the second construction task. The leader, working with both group members in the same room, would be asked to build eight models using a group assembly line procedure. This type of procedure required that no single group member could complete all 14 steps needed to finish a model, but that both group members must contribute to the building of all models. The leader was also instructed that during the production period, he could not actually help in the building of the models. Instead, he could point out errors to the group members, check the quality of the completed models, etc. Furthermore, bonus points would depend on how well the group did. Failure of one group member to complete his part of the task would result in failure for the entire group. After receiving these instructions, leaders were asked to study the second model so that they could instruct the group members in the appropriate procedures. In addition, they were handed paper to record their ideas concerning how the work could be divided between the group members to facilitate group assembly line performance.

In the individual condition, the leader was given the same responsibilities for teaching both group members the steps involved in completing the second production task, for developing a strategy for building the models, for checking the quality of the models and pointing out errors. However, in the individual condition, the second construction task was introduced as a more independent activity. The leader was instructed that he would work with each group member separately. After completing the task with one group member, he would work with the other group member. The group members would not work with each other nor would the failure of one group member to complete the task have any affect on the bonus points earned by the other group member. Furthermore, an individual assembly line procedure would be used in completing the second task. Each group member would be asked to build eight models, paying attention to speed and quality. However, a group member could not complete one model before he began another model in the sequence. After

receiving these instructions leaders were asked to study the steps for the second task, so that they could instruct and make suggestions to the other members of the group, to facilitate individual assembly line performance.

#### Manipulation of Leader Pay, Leader Allocation Design

Leader pay was manipulated by varying the extent to which the leader's salary was contingent upon the group's level of performance on the second task. In the contingent pay condition, the leader received a fixed salary of \$.75 and a bonus equal to 50 percent of the total group's earnings. Leaders were informed that their bonus money would not be taken from the group's earnings, but would be provided by the experimenter.

In the non-contingent condition, the leader was paid a flat rate of \$1.80 for his work when the second task was completed, irrespective of the performance of the group. In all conditions, the leader would receive a flat rate of \$1.80 after the first construction period was completed and the leader allocated the money earned by the group between the members of the group.

After receiving these instructions, the leader began studying the second construction task and writing his suggestions for organizing the task on carbon paper which could be distributed to the members of the group. The leader performed these tasks while the group members were completing the first construction period.

#### Performance Manipulation, Group Member Reaction Design

After the group members completed the first production task, the experimenter entered each room and collected the group members' work basket. Upon entering the room, the experimenter "ostensibly" carried with him the other group member's work basket. If the group member was in the high performance condition, the other group member's basket had approximately half the number of completed models in it. If the group member was in the low performance condition, the other group member's basket had approximately twice the number of completed models in it. After collecting the work baskets the experimenter announced that he would return in a few minutes with a feedback sheet to let the group member know how many bonus points his group earned.

After a few minutes had elapsed, the experimenter reentered each room and handed each group member and the



leader a feedback sheet indicating that the group had earned 210 bonus points worth \$2.10. In each group, the low performing group member contributed 67 bonus points towards the total earnings of the group and the high performing group member contributed 147 points. The experimenter stated that the leader would return in a few minutes with each individual's earnings after he allocated the group's earnings between the group members. Following these verbal instructions, the experimenter handed each group member a copy of the written instructions for the second task.

#### Group Member Instruction, Second Task

These instructions stated that the second production task again required that the group members build as many acceptable quality models as possible during a 10 minute production period. Bonus points could again be earned by the group members which could be converted into money. Again, the leader would have the responsibility to divide the money earned by the group between the group members. The leader would meet with each group member in a few minutes, give him a copy of the problem he selected for the second task, give him a copy of his ideas for organizing the second production task, and allocate the money earned for the first production problem. After meeting with the leader, group members would have 10 minutes to learn the steps involved in the second production problem and then the second production period would begin. Finally, these instructions to the group members included a section outlining the leader's rate of pay. The manipulation of whether the leader's pay was contingent on the performance of the group or non-contingent was the same as presented under Manipulation of Leader Pay, Leader Allocation Design.

#### Leader Allocations

While the group members were reviewing the above instructions, the leader was given the same feedback sheets the group members received. In addition, the leader was handed a money tray containing \$2.10 to be divided between the group members and \$1.80 representing his own salary for the first task. The leader was asked to allocate the \$2.10 between the group members using the enclosed pay envelopes for these purposes. On each pay envelope, the name of each group member was printed with the number of bonus points he earned. Leaders indicated the amount of money they wished to allocate to each individual on the envelopes, and placed the appropriate amount of money in the envelope that each person would receive. After the leader completed his allocations, he completed a questionnaire about his feelings

towards the group members, their respective performance, and questions about the experimental manipulations. The leader was then asked to cooperate with the experimenter in the remaining part of the experiment, since his help was necessary to complete the experiment dealing with group member reactions and maintain the different cover story the group members had received about the leader's activities. None of the leaders refused to assist the experimenter and their remaining part in the experiment is outlined below.

Manipulation of Equity Versus Equality, Group  
Member Reaction Design

After the group members reviewed the instructions for the second task, the leader and experimenter entered each room separately. The leader handed each group member his pay envelope. The pay envelopes the leader distributed were prepared by the experimenter. Half of the group members received envelopes which allocated the total money earned by the group (\$2.10) based on a rule of equity. Here, the high performing member of the group received \$1.47 and the low performing member of the group received \$.63. The remaining group members received pay envelopes based on a rule of equality. In this condition, each group member received a pay envelope containing \$1.05.

Following the distribution of pay envelopes, the leader handed each group member a copy of the blueprint for the second production task that he "ostensibly" chose and a written suggestion indicating why he picked this task and some ways to organize the task. These suggestion forms were also prepared by the experimenter with the leader agreeing to distribute these standardized suggestion forms. The suggestion form distributed by the leader is reprinted below:

"I chose the moon tent model building task because it is similar to the shallow water carrier task that you have just completed. Steps 1-9 of the shallow water carrier task are similar to the first 11 steps you will be doing on the moon tent. Be careful when you reach steps 12 and 13 of the moon tent as you will be asked to only fold the corners of your model up, unlike steps 10 and 11 of the shallow water carrier where you brought the bottom all the way to the top. Also, be careful that your paper is situated correctly on steps one and two."

After the group members read the leader's suggestion and had ten minutes to learn the steps involved in building the moon tents, the second production period began. At the

conclusion of the 10 minute production period, the experimenter distributed a questionnaire measuring group member reactions while he scored group member performance. Following completion of the questionnaire, group members were debriefed.

#### Dependent Variables, Leader Allocation Experiment

The major dependent variable in the leader allocation study was the manner in which the leader divided the group's earnings between the members of the group. The leader's allocation was analyzed in two ways. First, the amount of money given to the high performing group member was analyzed. Since all leaders were given the same amount of money, \$2.10, examining the amount of money given to the low performing group member would only provide redundant information.

Second, the leader's allocation was classified as one of either equity or equality. Equity was defined as with one cent of a \$1.47/\$.63 distribution to allow for slight error on the part of the subjects. All other distributions were defined as a tendency towards equality.

In addition, all leaders completed a questionnaire measuring the success of the experimental manipulations, perceptions of leader endorsement (Michener and Burt, 1975), reactions towards the group members and the Levinson Locus of Control Scale (1973). This latter scale was examined as a potential moderator of allocation strategies used by leaders. Leaders completed this scale prior to receiving feedback about the group members' performance and before making their allocations.

#### Dependent Variables, Group Member Reaction Experiment

The major dependent variable was the number of moon tents produced during the second production period. In addition, group members completed a questionnaire responding to questions measuring the success of the experimental manipulations, their endorsement of the leader, and perceptions of their leader's "allocation" strategy.

### Results

#### Leader Allocation Experiment

Preliminary analysis suggested the possibility that the personal control scale in the Levinson Locus of Control

Scale (1973) might be related to the leader allocations, due to a correlation between the personal control scores and the amount of money the leaders allocated to the high performing group members. Thus, leaders were divided at the median on the personal control scale and leader reactions were analyzed in a 2 (leader salary) x 2 (leader task expectations) x 2 (high versus low personal control) analysis of variance design.

#### Success of Experimental Manipulations

Two questions measured the success of the experimental manipulations. The first question dealt with perceptions of leader pay, whether or not it was contingent upon the performance of the group members. There was a main effect of the leader salary manipulation upon perceptions of leader pay,  $F(1, 23) = 78.85, p < .000$ . Leaders in the contingent pay condition perceived that their salary was more dependent upon the group's performance ( $\bar{x} = 5.58$ ), than leaders in the non-contingent condition, ( $\bar{x} = 2.21$ ). In addition, there was a main effect of the group versus individual manipulation,  $F(1, 23) = 4.25, p < .05$ , on leader expectations of working with each individual separately, or working with both group members collaboratively on the second task. The direction of the difference was consistent with the experimental manipulations.

#### Leader Allocations

Initial analysis of the allocation strategy used by the leader examined the amount of money paid to the high performing group member. Analysis revealed, only, a marginally significant main effect for the locus of control variable,  $F(1, 23) = 4.05, p < .056$ . Leaders with high personal control scores allocated more money ( $\bar{x} = 143.93$ ) to high performers than leaders with low personal control scores ( $\bar{x} = 133.35$ ). Since the amount of money allocated between the group members was symmetrical, the high internal control leader compared to the low internal control leader tended to allocate less money to the low performing group member.

A second analysis of leader allocation involved the categorization of leader allocations into one of equity, if the allocation was within one penny of a \$1.47/\$.63 split, or equality if the allocation deviated by more than one penny. Chi-squared analysis revealed a significant relationship between leader locus of control and allocation strategy,  $\chi^2 = 7.30, p < .01$ . Of the 14 high personal control leaders, 13 followed equity and one tended towards equality in the distribution of rewards. Of the 17 low

personal control leaders, 8 followed equity and 9 tended towards equality in the distribution of rewards.

#### Leader Questionnaire Data

Questionnaire data did not reveal any systematic differences, by experimental condition, in the reasons leaders gave for the distribution of rewards. Leaders did not indicate that they allocated the bonus money in an attempt to promote positive feelings between the group members, promote harmony between the group members, to try to motivate the high or low performing members of the group or to insure that the high or low performing group member would work well with the leader, as a function of any of the experimental manipulations or measured variables.

With respect to locus of control, two questions did indicate that high personal control compared to low personal control leaders tended to attribute performance more to ability for the high performing group members,  $F(1, 23) = 7.29$ ,  $p < .02$ , and the low performing group members,  $F(1, 23) = 8.52$ ,  $p < .008$ . Similarly, effort was a more likely causal factor of performance for the high personal control leaders in judging the performance of the high performing group members,  $F(1, 23) = 13.68$ ,  $p < .001$ , and low performing group members  $F(1, 23) = 9.4$ ,  $p < .005$ . Such attributions would be quite consistent with the locus of control scale (Levinson, 1973) and simply provide a check on the measuring instrument.

#### Leader Perceptions of Their Endorsement

Finally, leaders were asked to estimate the extent group members would endorse them as leaders. None of the manipulated or measured variables influenced the leader's perception of his endorsement by either the high or low performing group member.

In addition, an internal analysis was performed using the actual allocation strategy of the leader as an independent variable and assessing its effects on the leader's perception of his level of endorsement. A main effect was found of leader allocation (equity versus equality) on perceived leader endorsement by the high competent group member,  $F(1, 23) = 4.72$ ,  $p < .04$ . Leaders using equity perceived higher endorsement from the high performing group member ( $\bar{x} = 21.88$ ) compared to those leaders using equality ( $\bar{x} = 18.9$ ). There was no corresponding trend when the anticipated endorsement by the low performing group member was examined.

## Group Member Reactions

### Success of Experimental Manipulations

Three questions assessed the effectiveness of the experimental manipulations. In response to a question indicating whether the group members felt overpaid after the first production task, there was a second order interaction of group member performance  $\times$  group member pay on perceptions of overpayment,  $F(1, 57) = 6.57$ ,  $p < .02$ . Low performing group members perceived they were overpaid under equality ( $\bar{X} = 5.49$ ) compared to equity ( $\bar{X} = 2.70$ ),  $p < .01$  (Tukey). There were no differences in perceived overpayment for the high performing group members as a function of the equity/equality manipulation. In addition, there was a main effect of group member pay on perceptions of overpayment,  $F(1, 57) = 17.94$ ,  $p < .000$ , such that group members paid on a rule of equality felt more overpaid than those paid on equity. There was also a main effect of group member performance on perceptions of being overpaid,  $F(1, 57) = 13.94$ ,  $p < .000$ . Low performing group members ( $\bar{X} = 4.06$ ) felt more overpaid than high performing group members ( $\bar{X} = 2.50$ ). Both of these main effects appear largely a function of the significant interaction which was obtained.

In response to a question assessing perceptions of underpayment, there was the expected interaction of group member performance  $\times$  group member pay on feelings of being underpaid,  $F(1, 57) = 9.88$ ,  $p < .003$ . High performing group members felt more underpaid under equality ( $\bar{X} = 3.27$ ) compared to equity ( $\bar{X} = 2.12$ ),  $p < .05$  (Tukey). Differences between the low performing group members were not significant as a function of the equity/equality manipulation.

The final question checked on perceptions that the leader's salary was dependent upon the level of group member performance. As expected there was a main effect of leader salary,  $F(1, 57) = 26.77$ ,  $p < .000$  on perceptions that the leader's salary was related to the group's level of performance in the contingent ( $\bar{X} = 5.22$ ) compared to the non-contingent condition ( $\bar{X} = 2.91$ ).

### Group Member Performance on the Second Production Task

Of major interest was whether the group member would restrict or increase their productivity as a function of their salary and to determine if the leader's pay, when contingent upon the group member's performance, would enhance this tendency.

The measure of group member performance was the number of units produced during the second production period minus the number of units produced during the first production period. A constant of one was added to eliminate negative numbers. Analysis did not indicate that any of the manipulated variables influenced productivity. There were no main or interaction effects on the dependent measure of productivity.

#### Questionnaire Responses of the Group Members

Responses to a questionnaire did not reveal any differences between the group members concerning the reasons that the leader may have followed an equity versus an equality allocation strategy. Questions concerning, promotion of positive feelings between group members, promoting harmony between group members, motivating the group members, or insuring that the group members would work well with the leader did not reveal any differences as a function of the experimental manipulation of pay.

The only significant differences found were on a question asking the group members how they would have allocated the money on the first production task. There was a significant second order interaction of group member performance  $\times$  group member pay on their allocation,  $F(1, 57) = 10.15$ ,  $p < .002$ . High performing group members tended to allocate more to themselves following the equity allocation by the leader ( $\bar{X} = \$1.40$ ) than when the leader used an equality allocation ( $\bar{X} = \$1.12$ ),  $p < .01$  (Tukey); low performing group members did not differ in the amount they would have taken for themselves as a function of previous equity distribution ( $\bar{X} = \$0.64$ ) or equality allocation ( $\bar{X} = \$0.72$ ).

#### Group Member Endorsement of the Leader

With respect to leader endorsement, there was a triple interaction of group member performance  $\times$  group member pay  $\times$  leader salary on leader endorsement,  $F(1, 57) = 5.76$ ,  $p < .02$ . The nature of this interaction suggested that when the group member was a high performer, equity in allocation led to higher endorsement under contingent leader salary than under non-contingent leader salary, while equality in allocation led to higher endorsement under non-contingent than contingent leader salary. For low performers this pattern of results was completely reversed. Equity produced higher leader endorsement under non-contingent leader salary compared to contingent leader salary and equality producing

higher endorsement under contingent as compared to non-contingent leader salary.

### Discussion

The results of this study are not consistent with those of earlier studies on third party allocations and responses to those allocations. With respect to leader allocations, although manipulation checks verified the effectiveness of the manipulations in the leader allocation design, strategies used by the leaders was found to vary systematically only as a function of locus of control, a measured personality variable. This suggests that under conditions where it may have been beneficial for the leader to increase motivation of the group members (the leader's salary was contingent upon the group member's performance), there was no attempt to allocate the group's earnings in a conscious manner to increase motivation. Similarly, in a situation where the group members would work collaboratively together on the second task, there was no systematic attempt to allocate money in a manner to promote harmony or positive feelings between the group members to insure cooperation on the second task.

The fact that leaders did not violate equity to motivate performance when their own pay was contingent upon group performance and the fact that they did not violate equity to increase cooperation and group harmony suggests that in real as opposed to role-play group situations leader personality or values may play a more important part in allocation than any particular instrumental strategy. Certainly, our results with locus of control, combined with the work of Greenberg (1979) on Protestant Ethic suggests that more careful consideration be given to allocator personal characteristics in future allocation research.

With respect to group member performance, our manipulations also appeared to be highly effective. Under conditions of equity high performers felt underpaid and low performers felt overpaid relative to those receiving equitable allocations.

Interestingly, the leader's allocation strategy did appear to influence group member endorsement. High performing group members reported higher leader endorsement when the leader's allocation strategy matched the method by which the leader himself, was rewarded. When the leader's salary was contingent on group performance, allocations based on equity led to higher endorsement than allocation



based on equality for high performers. When the leader's salary was independent of group performance, however, allocations based on equality led to higher endorsement than those based on equity. Low performing members appeared to reverse this trend. Possibly they felt equality was more justified when the leader's pay was contingent upon their performance, because in part they felt their effort contributed to the leader's earnings. On the other hand, when their effort did not contribute to the leader's earnings (non-contingenet condition), they may have felt that equity was an appropriate allocation strategy.

While endorsement varied as a function of the leader's allocation strategy group member performance, in terms of quantity, did not. It is possible that other dependent measures such as quality would have been more sensitive to the experimental manipulations, however, quality was not measured in this experiment. Future research might look at differences in performance quality as a function of leader allocations. Examination of this dependent variable might result in greater consistency with previous literature examining the effects of violations of equity.

## REFERENCES

- Adams, J. S. Towards an understanding of inequity. Journal of Abnormal and Social Psychology, 1963, 67, 422-436.
- Adams, J. S. Inequity in social exchange. In L. Berkowitz (Ed.), Advances in experimental social psychology, 2. New York: Academic Press, 1965.
- Deutsch, M. Equity, equality and need: What determines which value will be used as a basis for distributive justice? Journal of Social Issues, 1975, 31, 137-149.
- French, J. P. R., & Raven, B. H. The bases of social power. In D. Cartwright & A. Zander (Eds.), Group dynamics: Research and theory, 2. New York: Row, Peterson, 1968.
- Garland, H., & Judd, B. Does equity describe the results of allocation experiments? Journal of Management, 1978, 4, 7-16.
- Greenberg, J. Effects of reward value and retaliative power on allocation decisions: Justice, generosity or greed? Journal of Personality and Social Psychology, 1978, 36, 367-379.
- Greenberg, J. Protestant ethic endorsement and the fairness of equity inputs. Journal of Research in Personality, 1979, 13, 81-90.
- Greenberg, J., & Leventhal, G. S. Equity and the use of overreward to motivate performance. Journal of Personality and Social Psychology, 1976, 34, 174-179.
- Leventhal, G. S. The distribution of rewards and resources in groups and organizations. In L. Berkowitz & E. Walster (Eds.), Advances in experimental social psychology, 2. New York: Academic Press, 1976.
- Levinson, H. Multidimensional locus of control in psychiatric patients. Journal of Consulting and Clinical Psychology, 1973, 41, 397-404.
- Michener, H. A., & Burt, M. R. Components of 'authority' as determinants of compliance. Journal of Personality and Social Psychology, 1975, 31, 606-614.

**APPENDIX: Research Publications**

**On Grant No. DAHC19-77-G-0005**

**Articles In Print**

**Leader Interventions to Ameliorate the Negative Consequences of Collective Group Failure, Journal of Management, 1978, 7-15.**

**Proceedings**

**Ego-Enhancement/Defensiveness of Leader Attributions Following Collective Group Success and Failure and the Effects of These Attributions on Group Integration and Leader Endorsement, Towards Renewal in Management Thought and Practice, Proceedings of the Southern Management Association, 1978, 101-103.**

**Group Member Compliance As A Function of Group Member Competence, Leader Monitoring Behavior and Interaction Anticipation, In Press, Proceedings of the Southern Management Association, October, 1979.**

**Papers**

**Group Member Endorsement and Compliance Towards the Leader As A Function of Leader Competence and Group Member Competence, Paper presented at the Academy of Management Meetings, San Francisco, 1978.**

**Articles In Review**

**Compliance with A Leader's Suggestion As A Function of Leader/Group Member Competence and Reciprocity**

**Compliance with Leader Suggestions As A Function of Leader/Group Member Competence and Influence Mode**